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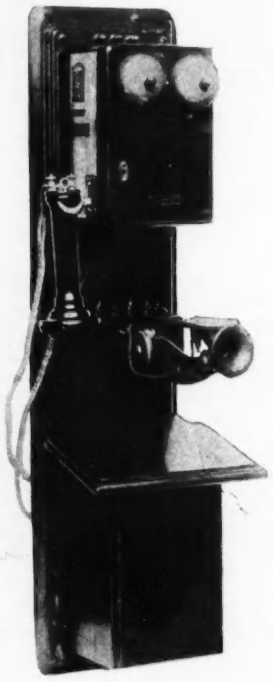
# PAPER TRADE JOURNAL

MARCH 28, 1946





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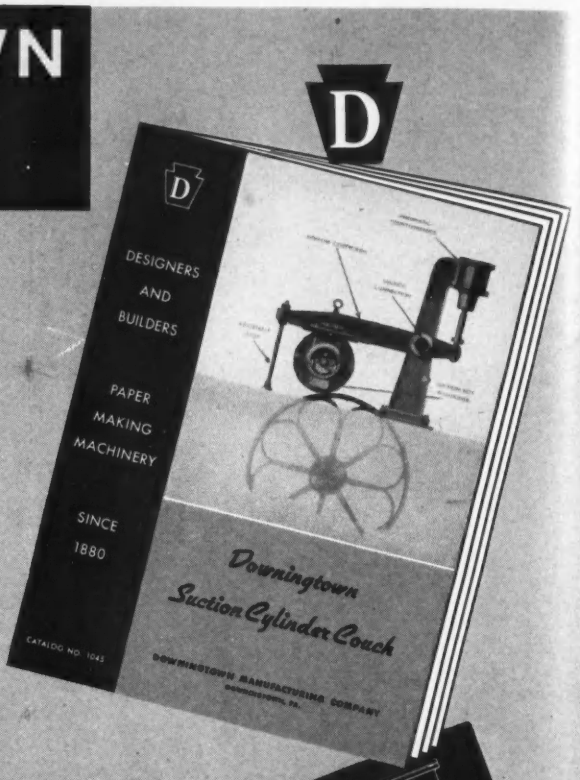


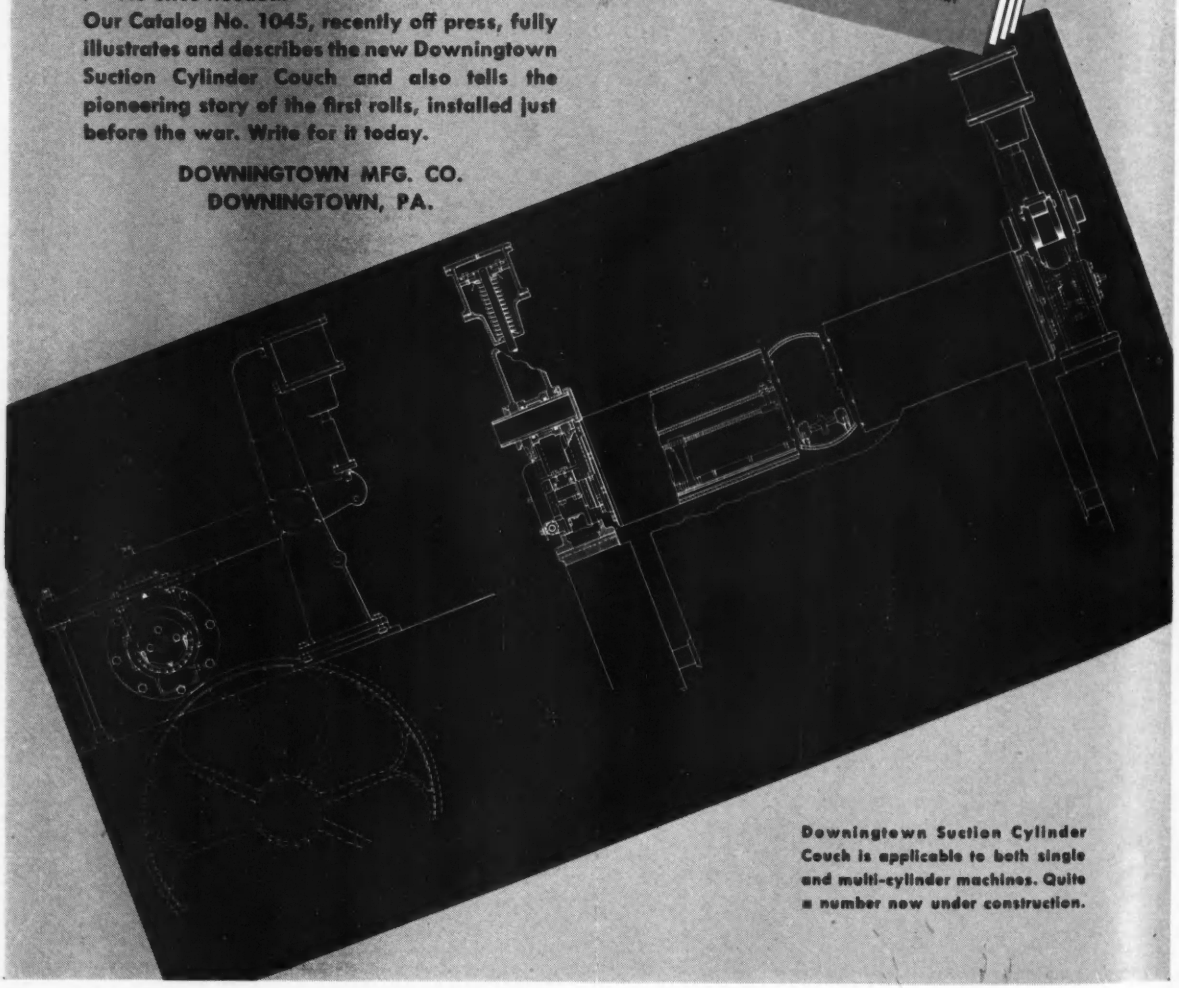

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**PAPER TRADE JOURNAL**

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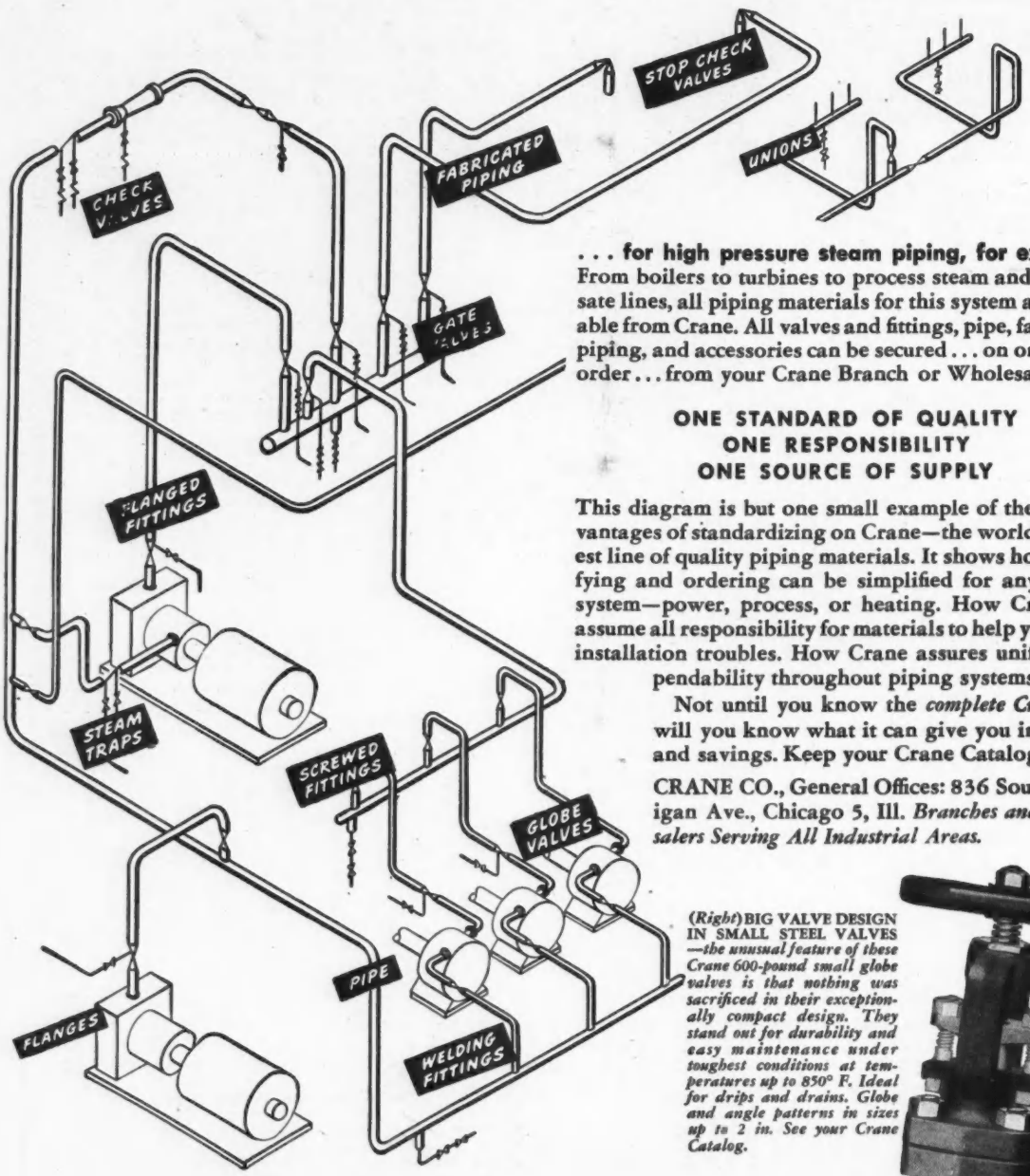


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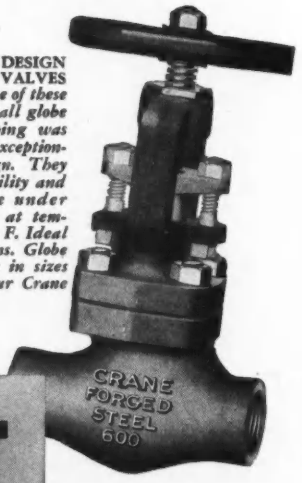


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PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

March 28, 1946

# Newsprint Price May Rise to $73 Per Ton

## Possibility of Increase From $5 To $6 A Ton Would Give Best Price Level Since 1925 — Mills Embarrassed By Demands — No Extra Shipments of News To Britain Likely — Other Mill News.

MONTREAL, Que., March 25, 1946—Hints that have been dropped for some time past regarding the possibility of an increase in the price of newsprint have now crystallized into a statement in the press here that the selling price of newsprint has been under discussion and that there is a likelihood that a further rise of $5 or $6 a ton will become effective on July 1 next, bringing the price up to $72 or $73 per ton.

If this materializes it will mean the best price level since 1925, when the selling price of newsprint was $76.80 a ton. As close to 80% of the output of Canadian mills is sold on the United States market, and as U. S. funds currently are selling at a premium of approximately 10% while they were practically on a parity here in 1925, the actual return to the mills on a price of $72-$73 a ton would be in the neighborhood of $80 a ton as compared with $76.80 a ton in 1925.

Should this further price rise be negotiated for the second half of this year, it would constitute the fifth increase since 1943 and the sixth since 1937, when the depression level of $42.50 a ton was in effect.

Shipments of newsprint this year are running at a substantially higher level than last year, having increased 152,294 tons in the first two months, or 33.9%, the total being 601,624 tons as compared with 449,330.

Costs have become so high that in some quarters it is stated that, but for the premium on U. S. funds, newsprint at the present price would be selling at a loss. The major part of the manpower of the mills is engaged in woods operations, and woodsmen's wages have practically doubled in the past few years. The cost of mill labor has also increased materially.

It is also pointed out that newsprint mills in general have had little opportunity, over a period of nearly 20 years, to adequately take care of necessary plant improvements. This was emphasized during the depression years of the 30's by reason of sadly impaired earning power and working capital, while in later years priorities and difficulty in obtaining materials further held up improvements. As a result most mills today face the need for more or less substantial capital expenditures on plant improvements and modernization.

### Manufacturers Embarrassed by Demands

Since the removal of government control over the supply of newsprint in December last the experience of newsprint manufacturers here has proved embarrassing, since they have to be constantly refusing demands for increased supplies both in the home and the foreign markets.

The latest instance is in regard to India. During the past few days an Indian Supply Mission has been in Montreal seeking means of getting Canadian newsprint for India as quickly as possible. During the war Canada sent to India some 25,000 to 30,000 tons of newsprint, this being allocated by the Canadian Government as part of the quota for overseas export. At the same time all contracts between newsprint manufacturers and their customers—chiefly in the United States—were suspended, the government controlling the amount that was exported to the United States and other markets. Contract relations between the manufacturers and their customers were resumed on the lifting of controls, and as customers' demands, especially in the United States, were in excess of production, output was quickly and fully allocated, so there is now no newsprint to send to India.

The position is put thus by R. M. Fowler, president of the Newsprint Association of Canada: "The Canadian mills have great sympathy with the Indian position, but they are under extreme difficulty in meeting the Indian request as a result of the supply and demand position. There is no question that the Canadian people are willing to help India, because they recognize that with the economic and political situation over there it is essential that they should have newsprint to publish the papers that would guide public opinion. If there is any possible way by which Canada can send newsprint to India I am sure it will be done, but with other commitments under contract to their customers, it does not seem there is any legal way in which manufacturers can do so, unless two parties get together and release some of the newsprint for India."

### No Extra Shipments to Britain

Another feature of the situation is that hope has been abandoned for increase of shipments to the United Kingdom this year. Last fall, after the British Government held up contracts that had been made with British publishers for shipments to Britain of 220,000 tons of newsprint in 1946, the government granting import licenses for token shipments of only 50,000 tons during the year, the manufacturers allocated every pound of newsprint that could be made this year, and as contracts then made under these allocations cannot now be changed, there will be no further newsprint for Britain, even if called for.

Following the arrangement for a billion and a

*(Continued on page 37)*

# Materials Shortage Still Worries Trade

## Supply of Waste Papermaking Fibers Is Considered Serious Despite Current High Paper Output — To Discuss Starch Crisis — More Markets For Packages — Would Modernize Forest Industries.

CHICAGO, Ill., March 25, 1946—Concern over the raw materials from which the paper trade draws much of its manufacturing ingredients seemed to get more attention this week in Chicago than did the actual pulp shortage itself. It would seem, as one leading paper trade executive expressed it, that the industry was waking up to the fact that "it took more than just pulp to make paper and finish it for consumer use." Those who surveyed the picture found it none too encouraging and the findings tempered some optimism which had begun to make real headway last week. Despite these notes of discouraging nature, increased production within the industry was noted along with the less hopeful fact that such production was by no means sufficient to meet new demands.

Brightest spot, but hardest pressed, on the horizon was the folding box and container industry where everybody seemed to feel the greatest expansion was in prospect.

Ceiling prices were being quoted for waste paper and collections were reported to be maintained. Mills in this area were said to be just "holding their own" as far as inventories were concerned. It was reported here that the Office of Price Administration is not contemplating any action on increasing the hauling charge on waste paper, a change which many expected would help materially in getting more incentive for an increased supply.

### To Review Starch Crisis

A panel discussion on "Weathering the Starch Crisis" will feature the April 15 meeting of the Chicago Professional Paper Group which will, as usual, be held in the dining rooms of the Chicago Bar Association. The critical situation which confronts the industrial users of starch-based adhesives and other products, well known to the trade, will be carefully reviewed with the thought that the picture will become gloomier in the months ahead. The panel is expected to uncover some ideas as to what the industrial user can do, how he can extend his diminishing supply of the tight materials and what the possibilities are of using additives or substitutes.

The following gentlemen will participate in the informal panel discussions: J. V. Bauer, Stein-Hall & Company; E. S. Gantt, Corn Products Refining Company; L. J. Hayhurst, Hayhurst Research Laboratory; J. E. Killinger, Penick & Ford; Fred Sanders, National Starch Products Company; Don Thom, F. G. Findley & Company and E. W. Morton, American Bitumels Company. All members of the Chicago Professional Paper Group are being urged to submit questions in advance of the meeting to permit careful study by members of the panel. Questions are to be submitted to J. L. Kubicka, program chairman.

At the meeting on March 18, the Group was privileged to hear a brief talk by D. C. Donaldson of the Eastman Kodak Company, and view a new Kodachrome Sound Film covering in detail the subject of "Modern Photo-Engraving". Mr. Donaldson first outlined the evolution of picture reproduction from the day of the "wood-cut" down through the 'stone-lithographing" methods, line drawing reproduction and introduction of the screen to break up solid into the resulting tones. He also briefly reviewed the development of four color processes. After viewing the intricacies and exacting methods necessary to produce four color engravings from Kodachrome and art work, the audience indicated appreciation for receiving a greater understanding of the art and the necessary high cost of producing this type of advertising.

### More Markets for Packages

A vast market for packaging, explaining, perhaps, the great interest of investors in box and container industries, was again emphasized this week by Roy E. Hanson, vice president in charge of sales of Milprint, Inc., of Milwaukee. Interviewed by the Chicago Journal of Commerce, Mr. Hanson indicated that as soon as materials are available almost all fresh produce in retail stores will be sold in prepackaged units. He indicated that the turnover of retail stores will be increased by these units of fruits and vegetables and that a great deal of spoilage and wastage will be eliminated.

### Continued Container Demand

W. S. Goodspeed, general manager of the American Box Board Company, with mills at Grand Rapids, Mich., reported this week to Chicago financial readers that the present huge market for paperboard, fibreboard and folding boxes which in 1945 prevented manufacturers from meeting the demand, will probably continue throughout 1946. The prediction was made in the company's annual report which indicated that net income in the year ended last November 30 rose to $328,796 or $2.39 a share compared with $286,809 or $2.14 a share in the preceding year. Mr. Goodspeed pointed out that 'the demand for wastepaper is as high as it was during the war and the supplies are still not enough to meet the demand. Waste paper, together with certain grades of pulp, will prove to be bottlenecks throughout the entire year." American Box has made additions to plant and equipment amounting to $226,000 and has placed orders for $475,000 worth of additional new machinery.

### To Modernize Forest Industries

A permanent organization to aid all states in modernization of forest industries has been advocated by Dr. G. C. Gillman, president of Michigan College of Mining and Technology. Dr. Gillman made the suggestion at a conference of representatives of state and federal forest products research agencies and added that forest industries were technologically underdeveloped and that in this field lay great potentialities for expansion of wood processing industries.

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# Forestry Experts Weigh Future Demand

## Research Agencies Foresee Need of Using More Hardwood—Employment Rises In Wisconsin Paper Industries—Safety Conference To Meet At Antigo — Edward Davitt Is Named Comptroller.

APPLETON, Wis., March 24, 1946—G. H. Chidester of the United States Forest Products Laboratory staff at Madison, Wis., told a conference of 100 representatives of state and federal forest products research agencies at Madison recently that the present annual consumption of 19 million tons of paper and paper board is about 50% greater than the amount used in 1929 and probably will go up another 25% in the next five years.

At the conference, the first of its kind ever called, Mr. Chidester said that in order to meet requirements for wood the paper industry would have to use species that may be less desirable, go farther afield for preferred species, or increase imports. He said that the laboratory had been conducting experiments using small proportions of hardwoods in mixtures with pine for manufacture of kraft products. "We have indications that 10% or more of hardwood sulphate pulps might be used in this way without sacrifice of quality," he added, "General use of small proportions of hardwoods mixed with pine could provide an outlet for perhaps as much as a million cords of hardwoods annually."

The session was devoted mostly to discussion of problems of the wood products industry and to a tour of the laboratory. A permanent organization to help all states modernize forest industries was advocated the previous day by Dr. Grover C. Gillman, president of the Michigan College of Mining and Technology, Houghton, Mich. Dr. Gillman suggested that forest industries were technologically undeveloped and that this field offers great potentialities for expansion of wood processing industries based upon wood waste as raw material.

Opportunities and needs for cooperation in forest research were outlined by George M. Hunt, director of the laboratory. He pointed out that research workers must help private forest lands produce at a profit if they were to be maintained for growing wood.

Hunt added that the country must reduce the enormous waste that takes place in converting wood into usable products, declaring that only about one-third of the average tree cut gets into the finished product.

Experimenting with wood waste utilization, the engineering experiment station at the University of New Hampshire is testing use of wood yeast as an animal feed and lignin in plant growth experiments on plants, according to L. E. Seeley, Durham, N. H., its director. The laboratory also is studying commercial exploitation of a low-cost plastic, using green sawdust, he said.

Connecticut is interested mostly at present in developing utilization of unpopular but common trees and in more efficient cutting of trees from young stands, William C. Shepard, of the Connecticut State Park and Forest commission, reported.

The New York State College of Forestry trains undergraduates and graduates in forest research problems and is working on problems involved in paper manufacture, Hardy L. Shirley, assistant dean, told the conference. The college has developed a portable burner for charcoal manufacture, he added.

### Paper Industry Increases Employment

Employment in the paper and paper products industries in January, 1946, showed a 1.3% increase compared with December, 1945, according to a report by the Industrial Commission of Wisconsin at Madison, Wis., but payrolls declined 1.4%. Employes totaled 24,700 in January, as compared with 24,400 in December. Weekly payrolls totaled $1,038,000 in January and $1,052,000 in December. Average weekly earnings amounted to $41.98, for 45.3 hours. The average hourly rate was 92.7 cents. The commission has discontinued its employment report for the Milwaukee metropolitan area, but is preparing to replace it with one showing month-to-month changes in employes, in payrolls, amount of payrolls, and earnings, and hours of work per week for production workers in selected factories in Milwaukee County.

### Safety Conference at Antigo

The 1946 Wisconsin Valley Safety Conference will be held June 13 at Antigo, Wis., it was decided at a meeting of the advisory committee at Antigo March 18. The 1945 conference, which had been scheduled for Antigo, was cancelled because of wartime restrictions.

Following the general pattern of past conferences, there will be afternoon sectional meetings, including one for the paper and pulp group. A general session also will be held. A feature of the paper and pulp section will be a quiz program with 16 questions and prizes of $100, and an additional prize for the employe with the best safety record.

### Davitt Named Comptroller

Appointment of Edward Davitt as comptroller of Kimberly-Clark Corporation, Neenah, Wis., was announced Saturday, March 23, by W. H. Clifford, vice president in charge of finances. Mr. Davitt, who was a principal at the Chicago offices of Haskins and Sells, is assuming his new post at Neenah, immediately.

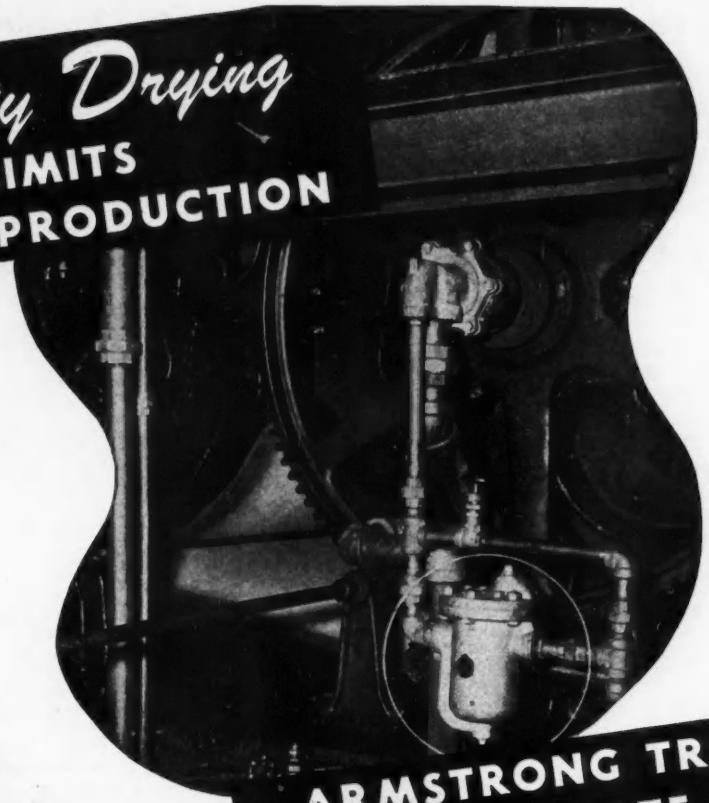
---

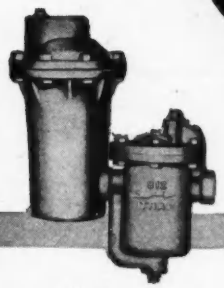
### Dr. Fisher Talks to Chemists

Dr. Harry L. Fisher, Stamford, Conn., spoke at a meeting of the Northeast section of the American Chemical Society Tuesday evening, March 19, at Science hall, Lawrence College, Appleton. His topic was "The Chemical Nature of Natural and Synthetic Rubbers." Dr. Fisher has been an instructor in organic chemistry at Columbia University, a research chemist with the B. F. Goodrich Company, Akron, Ohio, a research chemist with the United States Rubber Company. He is director of research for United States Industrial Chemicals.

A 6:30 dinner at the Copper Kettle, Appleton, preceded the address.

# *Faulty Drying* LIMITS PAPER PRODUCTION





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*Dryer Drainage System Trapping and Engineering*

## Conservation Group Seeks More Waste

PHILADELPHIA, Pa., March 25, 1946—Shortage of paper is delaying reconversion. The shortage, especially acute in wallboard and roofing, in packaging for industrial products, even extends to textbooks, which cannot fill school and college orders. With this warning, the Eastern Conservation Committee of the Waste Paper Consuming Industries appealed last week to "the war weary public" not to abandon the wartime saving of newspapers, magazines, cartons and mixed paper.

"We know of few things quite so important to the general welfare of the country," Colley S. Baker, director of the Conservation Committee, said, "as the ability of industry to supply paper for printing, paperboard for packaging and building materials for new homes."

Dealers who sort, bale and ship wastepaper to the mills, "cannot meet the mills' demands," he added, "because the public has in a large sense given up saving newspapers, magazines, cartons and mixed paper."

The Conservation Committee emphasized the industry was not asking the public "to participate in this campaign on a patriotic basis." Full ceiling prices prevail for all grades of waste paper and Eastern mills "are spending approximately $1,000,000 a week" for wastepaper bought from local dealers in every community.

But the supply of wastepaper is not sufficient. The public is burning paper instead of saving and selling it. This statement was made by one of Philadelphia's leading waste paper dealers, who said, "scavenging of waste paper on ash collection days during the summer will do some good" but declared the real solution can only be conscious care on the part of the individual householder in conserving all the paper that comes into his house.

Publishers of textbooks, Mr. Baker said announced "they are unable to meet the growing demands from the schools and colleges because they are unable to obtain enough white paper for that purpose."

The important fact in the whole situation, dealers emphasized is the warning "don't burn paper—save and sell it."

## English Joins Powell River

VANCOUVER, B. C., March 24, 1946—Norman A. English, formerly manager of the Alice Lake Logging Company, Ltd., and the O'Brien Logging Company, Ltd., has been appointed general manager of all logging operations of the Powell River Company. Mr. English has for many years been associated with Wood & English, Limited, in its lumbering and logging business at Englewood, B. C. Since 1940, he has been associated with the O'Brien Logging Company and also with the Northwest Cedar Products, Limited, as managing director. He is a director of the British Columbia Branch of the Red Cedar Shingle Bureau and a director of the British Columbia Loggers' Association. A. W. Deland continues as forest manager of the Powell River Company, and Ken Kington in charge of log purchases.

## To Move Waxed Paper Office

CHICAGO, Illinois, March 18, 1946—Offices of the Waxed Paper Insitute, Inc., wil be moved to new and enlarged quarters in the First National Bank Building, 38 South Dearborn Street on April 13, 1946.

## Union Bag Promotes Forestry Study

SAVANNAH, Ga., March 17, 1946—The Union Bag & Paper Corporation announced yesterday establishment of two forestry scholarships at the University of Georgia and two forestry fellowships at Duke University. O. J. Hardenbrook, vice-president of Union Bag & Paper Corporation, said the object is to stimulate the interest of young men in forestry problems of private owners and assist in educating qualified forestry students.

He added that the four-year scholarships will be awarded each year to high school graduates of Georgia, the recipients to receive $400 each. The basis of selection will be on high school achievements, preforestry training, interest in private forestry and personality.

Mr. Hardenbrook said the selection board will be composed of the State forester, the State 4-H Club leader, State supervisors of vocational agriculture, an official of the corporation and the dean of the School of Forestry.

"The fellowships will be awarded by the forestry school faculty at Duke on the basis of scholarship and personal qualifications required for successful private employment. They include $800 each with an additional joint fund of $900 for expenses incurred in pursuing the study. The Union Bag & Paper Corporation will employ the men granted the fellowship in advance of their study to acquaint them with individual forestry and also to help them gather data for theses," it was stated.

## Gair-Woodlands Obtains Charter

SAVANNAH, Ga., March 26, 1946—Indications that the Southern Paperboard Corporation will soon begin building a $12,000,000 paper mill at Savannah was seen last week when a Superior Court charter was granted Gair Woodlands Corporation, a subsidiary. Under its contract with the city, it is understood, Southern Paperboard Corporation has until April 1 to signify its intentions of proceeding with plans for the construction of the big mill on the former MacEvoy Shipyard site at Port Wentworth. The city is in the process of issuing $3,000,000 in revenue certificates for the construction of an industrial water system to supply water to the paper mill and other industries, it was stated.

Spencer M. Connerat, Henry M. Dunn and E. Ormonde Hunter were listed as petitioners in the application for a charter by Gair Woodlands Corporation. The corporation, according to the petition, will begin operations with a capital stock of $1,000 but is granted authority to increase the stock to $2,000,000.

## Hooper to Celebrate Anniversary

PHILADELPHIA, March 27, 1946—Hooper Paper and Twine Company, Inc., will observe in April its 25th anniversary. The company was established April 23, 1921 at 145 South Front Street, and moved to its present and larger headquarters at 103-105 Church Street, in 1930. George K. Hooper died August 15, 1945 and since that time the company has been under the supervision of members of the Hooper family as well as others of his former associates. The anniversary of the company will be observed by the members of the organization the evening of April 23rd, 1946 with an informal dinner at the Warwick hotel.

*"I'm glad you sent that Flintkote man down to the lab, J. D. He knew just what we needed.*

*"It seems he had worked out problems like ours before. We tried his recommendation in a pilot run yesterday, and it worked perfectly.*

*"Let's remember that fellow in the future. He told me that Flintkote makes a line of specialized asphalt emulsions for paper sizing and paper laminating. He'll probably be able to help us again."*



Flintkote products are used widely in the paper industry today.

In many cases, Flintkote Service Technicians first studied requirements thoroughly. Then the Flintkote Research Laboratory worked with the user to develop a better, quicker, or less costly way to do the job.

This widely varied background of experience is at your service. Send us full details of your sizing and laminating problems and we'll be glad to give you specific recommendations for their solution.

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## Parsons Plans Bigger Plant

HOLYOKE, Mass., March 16, 1946—The Parsons Paper Company is starting this year on a long-range plant expansion program that will increase production and improve the fine paper products of the local mill. A general outline of this was to be given to the stockholders at their annual meeting by Dr. Edward P. Bagg, Jr., president of Parsons and Henry V. Burgee, vice-president and general manager. Because of uncertainty in the availability of machinery and threatened restrictions on building materials the management can not prophesy how much of the plan which is designed to be completed within two or three years can be undertaken this year.

However, additional equipment in the finishing department will be installed in 1946. Hardy S. Ferguson, New York consulting engineer, who has designed several of the new mills in the South, has been engaged as consultant by Parsons. The New Haven industrial engineering firm of Westcott and Mapes has prepared plans.

There will be some building additions as well as extensive repairs on present buildings. Parsons officials said they cannot give an accurate estimate of the eventual cost of the program because of the obvious uncertainties of future prices; but it will mean an outlay of several hundred thousand dollars.

To finance this program it is planned to use funds from the earned surplus of the company together with funds borrowed from banks as term loans.

The net sales of the Parsons last year were $1,792,174.65, a drop of three per cent from 1944. Net profits were $74,784.87, a decline of 11 per cent from the previous year. The trend of labor and raw materials cost is continuing upward and if the company is to continue to operate profitably it must be allowed by OPA to increase, the Parsons officials warned.

The following officers were reelected: President, Dr. Edward P. Bagg, Jr.; vice-president and general manager, Henry V. Burgee; treasurer, Elmer B. Cooley; secretary, Albert S. Canfield.

The Parsons Paper company directors reelected are: Dr. Bagg, Burgee, and Cooley; Atty. Clifford S. Lyon, Roy E. McCorkindale, Richard M. Weiser and John L. Bagg.

## Tissue Mills Ups Pay Scale

HOLYOKE, Mass., March 16, 1946—Pay raises of five cents an hour for skilled workers and seven for unskilled have been agreed upon by the American Tissue Mills management and a negotiating committee of workers and have been accepted by Eagle Lodge of Papermakers, AFL, which represents workers in the company's two mills in South Hadley. The premium of four cents and six cents an hour for workers on the second and third shifts was also adopted. The payments will be retroactive to Feb. 4.

The provisions are similar to those embodied in agreements signed by the majority of the local paper mills in recent months.

## Beach & Arthur Elects Redlin

MODENA, Pa., March 18, 1946—A. W. Redlin has been elected vice-president of Beach and Arthur Paper Company. Mr. Redlin has been connected with this company since 1938 and has served as its general superintendent. Prior to 1938 he was with Kimberly Clark for 26 years.

## Mead-Inland Plant to Cost 20 Million

MACON, Ga., March 14, 1946 — As ground was broken for railroad spur tracks to serve new plants the Mead Paper Corporation and the Inland Paper Corporation began Tuesday estimates of the total cost of the equipment and installation for the two plants were increased to $20,000,000. Thomas Kinnett, engineer in charge, said that the Mead Corporation will spend $9,000,000 for equipment and $3,000,000 for installation, totaling $12,000,000. He added that the Inland Paper Corporation will spend approximately $8,000,000 for construction of its box factory, equipment and its installation.

"Machinery has been placed in operation to drill a well to supply water during all the construction work," Kinnett continued. "About 16 months will be required to complete the entire project. Caterpillar tractors, graders, scrapers and other machinery are on the job, and more machinery will be in operation from week to week. The entire area for the two plants will approximate 140 acres. Of this, the Inland Paper Corporation will occupy about three acres."

The Macon Telegraph commented: "Two new developments were disclosed yesterday by Kinnett. He said that a modern pumping station and water supply will be constructed to furnish about 2,000,000 gallons of water daily.

"Kinnett also disclosed that a powerhouse and generating plant will be constructed to supply all the electric current for the two companies.

"A total of 20 railroad spur tracks will be laid, including run-around tracks, wood-switching tracks, and other switching tracks. The wood-switching tracks will accommodate 65 cars and five other general switching tracks will accommodate 120 cars.

"Machinery will be installed to unload the wood from railroad cars and convey it into the plant.

"Kinnett said completion of the entire construction within 16 months will depend not so much on the weather as on the availability of materials which are 'tough to get.'

"Picks and shovels are hard to get," Kinnett said. "We had to buy second-hand handles for our picks at a junk shop and we are buying all the nails we can get."

The construction office, occupying a temporary structure on the property, is in charge of S. T. Wilson.

## Labor Board Orders Scott Vote

The National Labor Relations Board has ordered an election at Scott Paper Company to determine whether the United Mine Workers, the CIO, or no union, will represent the production employes in their relations with management.

The election was originally requested by the United Mine Workers Union, and the date was set for March 14. The CIO followed with a request to participate, and it was reported last week that it had asked that the election be held later in the month. Officials of the company said that they have not been advised of the new date. Approximately 1800 employes are on the local rolls of the company.

## Consolidated Nets $3.16

The Consolidated Water Power and Paper Company, for 1945, reports a net income of $1,263,226, equal to $3.16 each on 400,000 common shares, compared with a 1944 net of $1,100,048, or $2.75 a share.

# Congress Awards Paper Contracts

WASHINGTON, D. C., March 25, 1946—The Joint Congressional Committee On Printing today made awards for paper for The Government Printing Office, bids for which were opened on March 18. The awards were as follows on those items for which bids had been received:

No. 3. Frank Parsons Paper Co., 8.92 cents.
No. 4. Frank Parsons Paper Co., 8.92 cents.
No. 5. Frank Parsons Paper Co., 8.92 cents.
No. 7. Mudge Paper Co., 7.59 cents.
No. 8. Paper Corp. of U. S., 7.59 cents.
No. 19. Mudge Paper Co., 9.92 cents (100,000 pounds); Central Ohio Paper Co., 9.92 cents (150,000 pounds).
No. 22. Stanford Paper Co., 7.57 cents.
No. 27. Aetna Paper Co., 16.94 cents.
No. 29. Aetna Paper Co., 17.19 cents.
No. 34. R. P. Andrews Paper Co., 7.52 cents (400,000 pounds); Mudge Paper Co., 7.51 cents (200,000 pounds).
No. 37. Barton, Duer & Koch Paper Co., 8.14 cents.
No. 38. Barton, Duer & Koch Paper Co., 7.57 cents.
No. 40. Consolidated Water Power & Paper Co., 8.455 cents.
No. 45. R. P. Andrews Paper Co., 7.91 cents (200,000 pounds); Barton, Duer & Koch Paper Co., 7.61 cents (400,000 pounds).
No. 46. Cauthorne Paper Co., Inc., 9.25 cents.
No. 47. Aetna Paper Co., 9.53 cents.
No. 48. Eastern Corp., 10.23 cents.
No. 50. D. L. Ward Co., 13.44 cents.
No. 53. R. P. Andrews Paper Co., 8.49 cents (200,000 pounds); Cauthorne Paper Co., Inc., 8.50 cents (200,000 pounds); Frank Parsons Paper Co., 8.49 cents (500,000 pounds); Whitaker Paper Co., 8.73 cents (100,000 pounds).
No. 54. D. L. Ward Co., 9.506 cents (500,000 pounds); Central Ohio Paper Co., 8.15 cents (50,000 pounds).
No. 55. R. P. Andrews Paper Co., 7.47 cents (450,000 pounds); Stanford Paper Co., 7.48 cents (200,000 pounds).
No. 57. D. L. Ward Co., 13.44 cents.
No. 58. D. L. Ward Co., 10.912 cents (no. 32) (200,000 pounds); 10.233 cents (no. 40) (200,000 pounds).
No. 61. Barton, Duer & Koch Paper Co., 9.45 cents.
No. 63. Aetna Paper Co., 12.33 cents.
No. 64. Aetna Paper Co., 14.98 cents.
No. 73. Graham Paper Co., 13.10 cents.
No. 76. Paper Corp. of U. S., 24.63 cents.
No. 78. Old Dominion Paper Co., 24.748 cents.
No. 85. Barton, Duer & Koch Paper Co., 28.00 cents.
No. 102. Aetna Paper Co., 9.26 cents.
No. 103. D. L. Ward Co., 10.185 cents.
No. 105. Aetna Paper Co., 16.97 cents.
No. 106. Aetna Paper Co., 13.75 cents.
No. 110. Aetna Paper Co., 17.77 cents.
No. 111. Aetna Paper Co., 14.35 cents.
No. 150. Eastern Corp., 10.23 cents.
No. 151. Eastern Corp., 10.23 cents.
No. 153. Wilcox-Walter-Furlong Paper Co., 10.23 cents (120,000 pounds); Eastern Corp., 10.23 cents (880,000 pounds).
No. 156. Aetna Paper Co., 14.15 cents.
No. 157. Aetna Paper Co., 14.45 cents.
No. 158. Aetna Paper Co., 14.75 cents.
No. 176. Barton, Duer & Koch Paper Co., 28.00 cents.
No. 177. Barton, Duer & Koch Paper Co., 28.00 cents.
No. 183. Whitaker Paper Co., 8.14 cents (100,000 pounds).
No. 191. Aetna Paper Co., 15.97 cents.
No. 203. Whitaker Paper Co., 9.00 cents.
No. 206. R. P. Andrews Paper Co., 14.88 cents.
No. 271. Paper Corp. of U. S., 9.50 cents.
No. 325. R. P. Andrews Paper Co., 6.17 cents (500,000 pounds); Whitaker Paper Co., 6.22 cents (500,000 pounds).
No. 326. R. P. Andrews Paper Co., 6.17 cents (500,000 pounds); Whitaker Paper Co., 6.22 cents (500,000 pounds).
No. 327. R. P. Andrews Paper Co., 6.17 cents (500,000 pounds); Whitaker Paper Co., 6.22 cents (500,000 pounds).
No. 366. R. P. Andrews Paper Co., 4.5425 cents.
No. 368. Consolidated Paper Co., 6.73 cents.
No. 369. Mead Sales Co., 4.40 cents (Caliper .060 and up); 4.775 cents (Caliper .050).
No. 370. Mead Sales Co., 4.40 cents (Caliper .060 and up); 4775 cents (Caliper .050).

## Sidney Roofing to Jump Capacity

VICTORIA, B. C., March 24, 1946 — Following earlier disclosure of expansion at the plant of the Sidney Roofing and Paper Company, R. W. Mayhew, head of the company, anounces that a $70,000 order for machinery has been placed by his firm. The order covers two hydropulpers at a cost of $35,000 each, delivery to be made in nine months.

They will increase the paper output at the Victoria plant by 20 tons per day. The two hydropulpers will be manufactured by Alexander Fleck, Ltd., of Ottawa, machinery manufacturers who have the Canadian production rights on patents held by American interests.

## Jim Allen Joins Universal

CHICAGO, Ill., March 22, 1946—After eight years with Self-Locking Carton Company, where he spent most of his time establishing the molded pulp Carry-Safe Egg Carton throughout the country, Jim Allen has moved on to Universal Paper Products Company as assistant sales manager. Universal is a wholly-owned subsidiary of the Lily-Tulip Cup Corporation of New York, and is a large factor in the paper cup and Sundae dish business. Jim suceeds Neal Sheldon, who has recently gone into the paper jobbing business for himself in Los Angeles.

## Kraft Waste Group Ends Its Work

APPLETON, Wis., March 26, 1946—At a meeting held at the Institute of Paper Chemistry on March 15, plans were completed whereby the National Council for Stream Improvement will take over all of the activities of the Wisconsin Kraft Waste Disposal Committee. The waste committee voted to terminate its activities as an independent committee and to carry on its future activities with the same personnel, as a committee of the National Council for Stream Improvement. An extended and intensified program at the Institute will be carried on during 1946 under the National Council's financing.

Since 1941 the Kraft Waste Disposal Committee has sponsored extensive research regarding the pollutional effects of kraft mill effluents. This work was carried on in its earlier phases by Dr. Arch Cole of the University of Wisconsin, in cooperation with the Wisconsin State Board of Health and was established as a project at the Institute of Paper Chemistry in 1943. The nature of the research conducted was in connection with determining the relative toxicity of black liquor constituents on fish life.

In 1945, at the suggestion of the Kraft Waste Disposal Committee, the National Council sponsored and financed an intensified research project at the Institute of Paper Chemistry relating to the effect of kraft mill wastes on aquatic life, including certain technical aspects of the problem such as determining the effect of effluents on micro-fauna upon which fish feed and the analysis of toxicity testing methods.

## Scott Workers Reject UMW and CIO

CHESTER, Pa., March 25, 1946—Scott Paper Company employes voted overwhelmingly against United Mine Workers or CIO union representation in a National Labor Relations Board election held last Thursday. The UMW received 158 votes; the CIO received 54 votes. There were 1325 production, maintenance and service workers eligible to vote, and all but 75, or 92 per cent of the eligible workers went to the polling places and cast secret ballots. Eight votes were voided and six votes were challenged on technicalities.

The NLRB ordered the election at Scott Paper on the demand of the UMW, which claimed to have signed up 77.5 per cent of the employes. The CIO union requested a place on the ballot and the election date was deferred by the NLRB to permit CIO participation. The two unions had been carrying on membership campaigns at the plant for more than a year.

## Port of Rochester Reopens May 1

ROCHESTER, N. Y., March 24, 1946 — Freight shipments by boat to Rochester, suspended since the close of the 1939 season, will be resumed in May, Joseph A. Biel, acting Deputy City Commissioner of Commerce, announced. Mr. Biel said the first ship scheduled is to bring 700 tons of newsprint from Cornerbrook, N.F., about May 20. Lack of shipping during the war caused the closing of the port.

## To Double Lufkin Capacity

LUFKIN, Tex., March 19, 1946—Construction to double the capacity of the Southland Paper Mills, Inc., plant is under way here. Mill officials estimate increased production will be under way within a year.

## Plan Newsprint Mill for Alabama

BIRMINGHAM, Ala., March 23, 1946—With Donald Comer, prominent textile manufacturer, as chairman of the board, incorporation of the Coosa River Newsprint Company, with plans for construction of a $10,000,000 newsprint plant at the Alabama Ordnance Works, Childersburg, Ala., was announced here today. Incorporation papers, filed in Talladega, Ala., list "the manufacture of newsprint paper" as the objective of the new company. Mr. Comer said the new company will seek to acquire a portion of the huge ordnance plant as a site for the proposed mill, and may use some of the ordnance facilities.

He added that the proposed plant "will cost in excess of $10,000,000" and "if we find the plan feasible, the company will convert some of the facilities of the Alabama Ordnance Works for the manufacture of paper, primarily the grade known as newsprint."

In addition to Mr. Comer, officers of the new corporation include J. W. Brown, Jr., of Sylacauga, Ala., president, and E. L. Widemire, Sylacauga, vice-president.

Directors: Mr. Comer, Thomas W. Martin, president of the Alabama Power Company; Clarence B. Hanson, Jr., publisher of the Birmingham News and Age-Herald; Walter Bouldin, Birmingham attorney, and Mr. Brown, president of the First National Bank of Sylacauga.

## Wright Joins Cushman & Denison

Cushman and Denison Manufacturing Company has appointed Robert E. Wright to handle sales promotion of their products known as Cado marking device and colors, including the specialty office supply devices. Mr. Wright comes to Cushman and Denison with a wide experience in the color marking identification fields. Formerly, he was sales manager of Floquil Products, Inc. and he was instrumental in establishing their products nationally. For the past twenty years, Mr. Wright has been in the allied industry as sales engineer for the American Marietta Company, T. J. Ronan Co., and Oakite Products, Inc.

## Tewksbury Elected Treasurer

NEWTON UPPER FALLS, Mass., March 24, 1946—At a recent meeting of the stockholders of Stowe-Woodward, Inc., E. L. Tewksbury was elected treasurer. Mr. Tewksbury's many years of experience in rubber rolls started with the original manufacturers of industial rubber products in the United States. He has been associated with Stowe-Woodward, Inc., for the past twenty-two years as field engineer, and will continue to act in this capacity, in combination with his duties as treasurer.

## Central Paper Advances Blickley

MUSKEGON, Mich., March 26, 1946—E. W. Pitt, the director of sales, Central Paper Company, Inc., has announced two changes in sales personnel. J. Ford Blickley has been promoted from the Detroit Office to be district manager of the New York state territory previously served by J. Ed. Willson. Leslie Roen has been promoted from the sales offices in Muskegon to be salesman, replacing Mr. Blickley in Detroit.

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# FINANCIAL NEWS

## New York Stock Exchange

High, Low and Last for Week Ending March 23, 1946

STOCKS

| | High | Low | Last |
|---|---|---|---|
| A. P. W. | 8⅝ | 8⅛ | 8⅛ |
| Armstrong Cork Co. | 56 | 54 | 56 |
| Celotex Corp. | 27¾ | 26 | 27¼ |
| Celotex Corp., pf. | 21½ | 21 | 21⅜ |
| Certain-Teed Products Corp. | 19¼ | 17⅝ | 19 |
| Certain-Teed Products Corp., pf. | 110½ | 110½ | 110½ |
| Champion Paper & Fibre Co. | 48½ | 46 | 48½ |
| Champion Paper & Fibre Co., pf. | 111½ | 111½ | 111½ |
| Congoleum Nairn Co. | 34¾ | 32¾ | 34½ |
| Container Corp. of America | 44⅞ | 43½ | 44½ |
| Continental-Diamond Fibre Co. | 15½ | 15 | 15¼ |
| Crown-Zellerbach Co. | 34¾ | 31⅞ | 34¾ |
| Crown-Zellerbach Co., pf. | 108 | 107⅜ | 108 |
| Dixie Cup Co. | 45 | 42½ | 45 |
| Dixie Cup Co.—A | 53½ | 52¼ | 52¼ |
| Flintkote Co. | 37 | 35½ | 36⅞ |
| Flintkote Co., pf. | 114⅞ | 113 | 113 |
| Robert Gair | 10¼ | 9¼ | 10¼ |
| Robert Gair, pf. | 20½ | 20¼ | 20⅜ |
| International Paper Co. | 46⅛ | 42½ | 45⅜ |
| International Paper Co., pf. | 118 | 112½ | 117½ |
| Johns-Manville Corp. | 153 | 147½ | 153 |
| Johns-Manville Corp., pf. | 139 | 136 | 139 |
| Kimberly-Clark Corp. | 61 | 60 | 61 |
| Mac Andrews & Forbes | 38½ | 37¾ | 38 |
| Mac Andrews & Forbes, pf. | .... | .... | .... |
| Masonite Corp. | 59½ | 57¾ | 59½ |
| Mead Corp. | 25¾ | 24⅜ | 25⅜ |
| Mead Corp., pf. A—6% | 106 | 105 | 105½ |
| Mead Corp., pf. B—5½% | 106¾ | 106½ | 106¾ |
| National Container Corp. | 27⅞ | 27 | 27¼ |
| Paraffine Companies, Inc. | 78 | 77 | 78 |
| Paraffine Companies, Inc., pf. | .... | .... | .... |
| Rayonier, Inc. | 24¾ | 23⅜ | 23⅞ |
| Rayonier, Inc., pf. | 38½ | 38⅛ | 38½ |
| Ruberoid Co. | 48 | 45½ | 46½ |
| Scott Paper Co. | 58 | 57 | 57¾ |
| Scott Paper Co., pf. | 108½ | 107 | 108½ |
| Sutherland Paper Co. | 44 | 43 | 43½ |
| Union Bag & Paper Corp. | 30½ | 26⅝ | 30¼ |
| United Paperboard Co. | 12¼ | 10 | 12⅛ |
| U. S. Gypsum Co. | 123 | 121¾ | 123 |
| U. S. Gypsum Co., pf. | 204 | 202¼ | 204 |
| West Virginia Pulp & Paper Co. | 41½ | 39 | 41¾ |
| West Virginia Pulp & Paper Co., pf. | 114 | 114 | 114 |

BONDS

| | | | |
|---|---|---|---|
| Abitibi Pulp & Paper Co. 5s '53 | 109 | 108⅝ | 109 |
| Celotex Corp. 3½s '55 | .... | .... | .... |
| Certain-Teed Products Corp. 5½s '53 | .... | .... | .... |
| Champion Paper & Fibre Co. 3s '65 | .... | .... | .... |
| International Paper Co. 5s '47 | .... | .... | .... |
| Mead Corp. 3½s '53 | .... | .... | .... |

## New York Curb Exchange

High, Low and Last for Week Ending March 23, 1946

STOCKS

| | High | Low | Last |
|---|---|---|---|
| Great Northern Paper Co. | 39¾ | 38¼ | 39¼ |
| Hummel-Ross Fibre Corp. | 12¾ | 11½ | 12¾ |
| St. Regis Paper Co. | 10⅝ | 9⅞ | 10½ |
| St. Regis Paper Co., pf. | .... | .... | .... |
| Taggart Corp. | 9 | 8½ | 9 |

BONDS

| | | | |
|---|---|---|---|
| American Writing Paper Co. 6s '61 | .... | .... | .... |

## Gaylord To Split Stock

General A. C. Goodyear, chairman of the board of directors of Gaylord Container Corporation, has announced that a 3 for 1 split-up of the common stock will be recommended by the directors to the stockholders at the annual meeting to be held on May 8. It is contemplated that notice of meeting and proxy material will be mailed to the stockholders during the course of the next several weeks. There are at present 975,000 shares of $5 par value common stock authorized, of which 541,281 shares are outstanding.

## Chemical Paper Profits Up

HOLYOKE, Mass., March 22—Reports filed under the "blue-sky law" with the state department of public utilities by Chemical Paper Manufacturing Co. of Holyoke, for 1945, showed net sales of $3,395,986, and net profit after all charges of $106,890. This compared with 1944 sales of $3,172,797, and net profit of $111,123.

## Howard Smith Reports Earnings Lower

MONTREAL, Que., March 25, 1946—The Howard Smith Paper Mills, Limited, reports production and sales for the year at an all-time high. Earnings for 1945 were somewhat lower than in the previous year —$3,794,958 as against $4,061,502, reflecting the lower trend, which has been in evidence since 1941.

President Harold Crabtree reports that pulpwood operations were more costly, and had continued to be difficult throughout 1945. While the mills were kept fully supplied, the situation had to be constantly watched. It was to be expected that with more labor available the position would become easier.

Touching on the company's new lignin-plastic plant, which had come into operation during the year, he said it was now in limited production on a few specialized lines, and while the development was still in its early stages, its future possibilities appeared bright.

The company has just made a new issue of $8,000,000 cumulative redeemable preferred shares of a par value of $50, with preferential dividends of $2 per share per annum. The whole issue was sold outright before public offering.

## Rolland Reports Increased Sales

The annual report of the Rolland Paper Company, of Montreal, makers of fine papers, shows that for the year ending December 31 last there was a net profit, after all charges including taxes, of $133,619 compared with $135,257 in 1944. Profit in 1945 was equivalent to $8.94 on preferred shares and 73 cents on the common as compared with $9.05 and 75 cents respectively in 1944.

Sales for 1945 showed an increase but steadily rising costs without any increase in ceiling prices for the company's products resulted in the slight drop in net profit.

Expenditures on capital account during the year amounted to $230,323 and a substantial program of plant re-habilitation and improvements is being considered by the directors.

Current assets are shown at $1,700,627 and current liabilities at $530,519, indicating net working capital of $1,170,108.

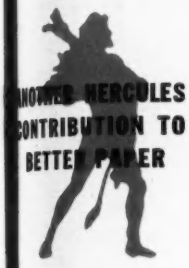
## Fraser Reports Progress

MONTREAL, Que., March 25, 1946—At the annual general meeting of shareholders of Fraser Companies Limited, at Edmundston, N.B., Aubrey Crabtree, president, reported progress in improving the company's mills, but said increased price ceilings on a few of the companies' products had been insufficient to offset increased cost, particularly in raw materials and wages. The companies' products (groundwood, sulphite pulp, and various kinds of pulp boards and sheathing papers) continue in strong demand, he said. The manpower shortage, although somewhat improved, still causes much concern, especially in woods operations. Hon. F. Philippe Brais, K.C., of Montreal, was added to the board, the other directors being reelected.

## Hinde & Dauch Profits Off

The Hinde & Dauch Paper Company for 1945 reports a net income of $999,067, equal to $2.01 each on 427,824 shares of common stock, compared with a 1944 net of $960,255, or $2.17 each on 360,250 shares.

# WANT WHEN YOU WANT IT!




For virtually any type of paper or paper product, Hercules has the size you want, *when you want it!* This service to papermakers, maintained consistently even throughout the war, stems from the fact that Hercules is the world's largest producer of rosin and rosin derivatives, and has at its command a thorough knowledge of rosin chemistry.

Hercules' wide range of sizing materials includes rosin sizes to meet the most diversified requirements. These sizes are available in three basic forms — dry, paste, and emulsion. Produced from a series of resins and modified resins, they can be tailor-made to meet practically every sizing need.

In addition, there are numerous Paracols* (wax and wax-resin emulsions) for sizing. Covering a wide range of compositions and properties, they impart special properties to the finished sheet.

Hercules Staybelite* size constitutes another useful development — when specialty papers are required which must be unusually bright, tasteless, and permanent.

*If size or its application is important to you, why not let our technical representatives tell you about the many standard and specialty sizes made by Hercules.*

*Reg. U. S. Pat. Off. by Hercules Powder Company

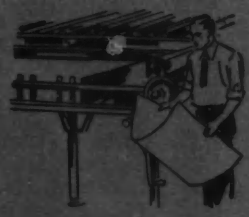
## CHEMICAL MATERIALS FOR THE PAPER INDUSTRY

## Other Hercules chemical materials for the paper industry include:

**Staybelite* Esters . . .**
Wax additives for coating and laminating processes, modifiers for GRS and Neoprene latex for impregnating and laminating paper and board stocks.

**Hercolyn***
A liquid resin for transparentizing. Possessing excellent fiber-wetting properties, it is useful for the production of transparent and translucent papers.

**Chemical Cotton . . .**
Hercules chemical cotton is a pure cellulose, in loose or sheet form. Cleanliness and brightness are outstanding.



**Casein . . .**
Hercules casein is used as the binder in clay-coatings, and as an adhesive in laminants and paper converting.

**Vinsol* Resin . . .**
A dark-colored resin with a high melting point. Low in cost, it is economical as a stiffener for paperboard.

**Chemicals . . .**
These include sulphonated oils, foam killers, eveners, acids, alkalies, alum, and satin white.

**FOR FURTHER DETAILS**

*Papermakers Chemical Department*
**HERCULES POWDER COMPANY**
INCORPORATED
*962 King Street, Wilmington 99, Delaware*

Please send information on_____

_____

*Name*_____

*Title*_____

*Company*_____

*Address*_____

*City*_____ *State*_____

9-48

## Quartermaster Certificate Awarded

Col. Rohland A. Isker, commanding officer of the Quartermaster Subsistence Research and Development Laboratory at the Chicago Quartermaster Depot has announced the award of Laboratory's Certificate of Appreciation to a number of individuals connected with the paper industry. This certificate was awarded for meritorious service in research and development phases of the World War II food program of the Army. The certificate commemorates an association of immeasurable value in the performance of the Army's mission.

Those receiving the ward include: H. T. Barker, Bird & Son, East Walpole, Mass.; L. S. Johnson, Hummel & Downing Company, Milwaukee, Wis.; George R. Sears, Institute of Paper Chemistry, Appleton, Wis.; W. H. Graebner, Marathon Corporation, Menasha, Wis.; Peter J. Massey, H. P. Smith Paper Company, Chicago, Ill.; Frank Pocta, Paper Shipping Sack Manufacturers Association, New York, N. Y.; Reynolds Guyer, Waldorf Paper Products Company, St. Paul, Minn.; Otto Miller, Beech-Nut Packing Company, Canajoharie, N. Y.; Karl E. Prindle, Dobeckmun Company, Cleveland, Ohio; R. G. Macdonald, Technical Association of the Pulp and Paper Industry, New York, N. Y.; Charles Southwick, Shellmar Products Company, Mt. Vernon, Ohio; A. Wendler, E. I. du Pont de Nemours Company, Wilmington, Del.

## Mando Shows Net Gain

The Minnesota and Ontario Paper Company and subsidiaries reported net income after taxes for 1945 at $1,549,042, equal to $1.15 per share on outstanding capital stock of 1,344,543 shares, compared with $1,125,287, equal to 83 cents per share on the same number of shares outstanding in 1944. Net sales for 1945 were $24,479,811, compared with $23,770,244 for 1944. Total current assets as of December 31, 1945 were $15,129,457 and total current liabilities were $3,991,222.

## Keith Employes Share Profits

TURNERS FALLS, Mass., March 22—Believed to be the first paper manufacturers in the country to put the plan into effect, the Keith Paper company of this town and the Deerfield Glassine company of Monroe Bridge today announced a pay increase of two cents an hour for all hourly rate employes. This increase is based on the profit-sharing plan.

Paul E. Hodgdon, president of the company, said that all salaried employes will also benefit under the new system. This new plan will effect about 300 employes at the Keith mill and some 200 at the Glassine company.

## Norton Leaves Strathmore

SPRINGFIELD, Mass., March 22—Cy Norton, manager of sales promotion and public relations of Strathmore Paper company has submitted his resignation from the company effective April 1 in order to accept a position on the staff of the Association of National Advertisers, New York.

## Bird & Son Net $1.03

Bird & Son, Inc., for 1945 reports a net income of $694,037, equal to $1.03 each on 567,196 common shares, compared with $786,572, or $1.20 a share, in 1944.

## Abitibi Plans Re-organization

TORONTO, Ont., March 23—At a meeting of Abitibi Power and Paper Company late last week adoption of the re-organization plan by holders of 91.7% of the par value bonds cleared the way for an application to the Supreme Court for supplementary letters patent. The meeting was held in Toronto and the bondholders represented $44,230,500 par value of the bonds issue. There were no dissenting votes, but before Abitibi is returned to complete corporate management there are still a few details to be straightened out.

At the meeting last week the following were nominated as Class A directors to represent the bondholders, and will hold office until the 1947 annual meeting: J. P. Ripley, R. H. Reid, H. J. Carmichael, D. W. Ambridge, G. R. Cottrelle, Allan Graydon, T. R. McLagan. The liquidator nominated W. H. Smith (present operating head of Abitibi), J. H. Gundy, J. S. D. Tory, and E. W. Bickle as Class B directors to hold office pending the shareholders' meeting.

## Oxford Employes Get Pay Raise

RUMFORD, Me., March 22—A wage increase of 10 cents an hour, retroactive to January 28, and an additional five cents an hour for those reduced to a 40-hour week, has been granted to the 2100 employes of the Oxford Paper company here, one of the world's largest book paper manufacturers. The increase was accepted by the employes after six weeks of negotiations between the company and representatives of the United Mine Workers Union (Ind.) bargaining agents for the employes.

# OBITUARY

### Clement H. Shelley

Clement H. Shelley, advertising manager of Fibre Containers, Chicago, died March 16, after an illness of six months. He was 53 years old. From about 1923 to 1937 he was associated with *Shears Magazine*. In 1937 he joined Fibre Containers.

He is survived by his widow, Clara Weber Shelley; two sons, William and James; a sister, Mrs. A. E. Rood; and two brothers, Clarence and Daniel.

### John J. Barry

Mr. John J. Barry, an associate of Merrimac Paper Company for the past fourteen years, died suddenly Tuesday, March 12, at the age of 34. As yet the company has made no provision for a replacement for Mr. Barry, who was puchasing agent and traffic manager.

### Clancy C. Colvin

SHELBYVILLE, Ind., March 22, 1946—Clancy C. Colvin, assistant treasurer of the Kennedy Car Liner and Bag Company, died March 18, of coronary thrombosis. Mr. Colvin had spent thirty-three years with this company as purchasing agent and credit manager, and was its assistant treasurer for the past four years.

### John J. Shea

SPRINGFIELD, Mass., February 25, 1946—John J. Shea, who retired in 1926 as a member of the Shea Brothers Coated Paper Manufacturing company, died Thursday at his home here. In his younger days he was widely known as an athlete and oarsman.

# WOODPULP AGENTS
# PAPER EXPORTERS

## ELOF HANSSON, INC.

NEW YORK

220 EAST 42ND STREET

OFFICES:
Gothenburg, London, Sao Paulo,
Buenos Aires, Rio de Janeiro

THE BOSTON PAPER TRADE GATHERS FOR ITS ANNUAL DINNER

## B. P. T. A. Elects J. R. Carter

BOSTON, Mass., March 25, 1946—James Richard Carter, II, of the Nashua Gummed and Coated Paper Company, Nashua, N. H., was elected president of the Boston Paper Trade Association at the Sixtieth Annual Meeting and Dinner in the Roof Ball Room of the Parker House.

Other officers elected were as follows: First vice-president, William N. Stetson, Jr., Storrs & Bement Company, Boston; second vice-president, F. Henry Savage, International Paper Company, New York City; treasurer, T. Charles Casey, Casey, Bigley Company, Boston; secretary, Frank B. Cummings, Newton, Mass.; Auditor, William C. Ross, Fort Hill Paper Company, Boston. Executive committee — Norman Harrower, Linton Brothers & Company, Fitchburg, Mass.; W. Edwin Porter, Jr., Cook, Vivian Company, Boston; Chas. A. Esty, Carter Rice & Co., Corp., Boston. Membership committee—Floyd H. Blackman, D. F. Munroe Company, Boston; J. Frank Halloran, Century Paper Company, Boston; Edgar P. Hay, American Paper Goods Company, Boston; Gilbert T. Singleton, Robbins Paper Company, Boston. Arbitration committee — George W. Wheelwright, The Mead Corporation, Leominster, Mass.; Arthur L. Hobson, St. Croix Paper Company, Boston; Charles A. Shaw, Whitney Bros., Boston; Harry C. Thayer, Hollingsworth & Whitney Company, Boston; Albert P. Carter, John Carter & Co., Inc., Boston.

## Wage Increase at Powers

SPRINGFIELD, Mass., March 22—A wage increase of 6 per cent retroactive to Monday, March 11, has been signed by the Powers Paper company and Federal Labor Union, Local No. 20582, AFL, the signatories being James Mead, general manager, and S. J. Vines, president of the local and also president of the Federal Industrial council. This follows a wage increase of 12 per cent in the Powers plant several months ago, and means that the women employes have benefited since 1941 by the total increase of 47½ per cent.

## West Virginia Profits 98 Cents for Quarter

Net profit of the West Virginia Pulp and Paper Company for the last three months of 1945 amounted to $1,047,071 after taxes, equivalent to 98 cents a share on common stock.

## Burbank Joins Air Lines

PITTSFIELD, Mass., March 10—Paul E. Burbank, Pittsfield native and former executive vice-president of the Eaton Paper Corporation, has been named manager of cargo sales for United Air Lines, it was announced yesterday by B. B. Gragg, director of traffic and sales. He was formerly development manager for the company's air cargo department.

Joining Eaton, Crane and Pike in 1927, Burbank was made merchandising manager when the firm became the Eaton Paper Corporation and in 1932 was named sales manager. He joined United Air Lines in 1940 as central cargo area manager at Chicago and was advanced to development manager of the department in 1942.

A navy pilot in World War I, Burbank has continued flying and holds a private pilot's certificate.

## Weldvalves Show Major Savings

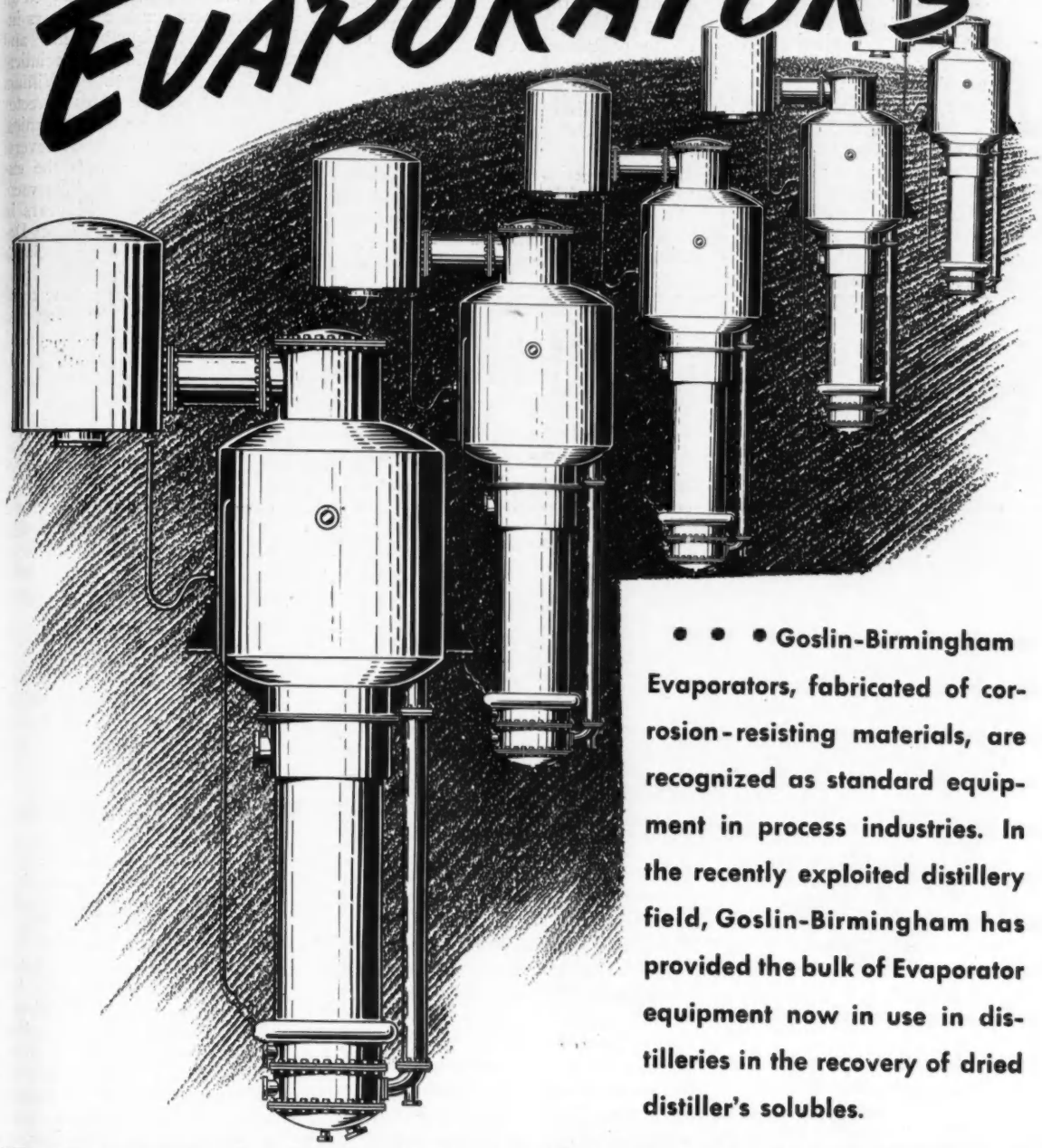
Manning, Maxwell & Moore, Inc. of Bridgeport, Conn., and Boston, Mass., has added to the Hancock valve line, a new steel Weldvalve in gate, globe and angle designs, 600 pound through 2500 pound standards. These new Weldvalve designs incorporate the suggestions and experience of a nation-wide cross section of the men who daily specify, buy and use high pressure steel valves. The designs also eliminate or neutralize valve joints, seat ring joints, bonnet joints and improve packing gland joints.

The manufacturer states that these new Weldvalves affect major savings in weight (30% to 60%), space, parts, replacements, maintenance and lagging expense, give precision and accurate alignment.

## Mult-Metal Issues New Catalog

A new catalog covering wire cloth and filer cloth and fabricated articles is being distributed by Multi-Metal Wire Cloth Co., Inc., 1350 Garrison Ave., New York 59, N. Y. This company—a 34-year-old institution in the industrial wire cloth field—continues under the original management. This catalog shows new developments in wire cloth as applied to filtration, sifting, screening and other processes. The largely expanded fabrication facilities are illustrated, showing entire range of service from a simple welded binding to a specially designed complete process unit.

# EVAPORATORS



• • • Goslin-Birmingham Evaporators, fabricated of corrosion-resisting materials, are recognized as standard equipment in process industries. In the recently exploited distillery field, Goslin-Birmingham has provided the bulk of Evaporator equipment now in use in distilleries in the recovery of dried distiller's solubles.

**GOSLIN-BIRMINGHAM MANUFACTURING CO., INC.**

**BIRMINGHAM ALABAMA**

**350 MADISON AVE NEW YORK**

**CHICAGO SAN FRANCISCO NEW ORLEANS SEATTLE**

## Exporters Elect Greiner

Adalbert Greiner, President of China American Paper and Pulp Company, Inc., was elected to the presidency of the United States Paper Exporters Council, Inc. at its annual meeting. Mr. Greiner succeeds Frank W. Smith, Vice-President of National Paper & Type Company, who, in reviewing the Council's progress emphasized the need for breaking down the indifferent export attitude of American paper mills and promoting this country's position in the export of paper and paper products to a level as high as that attained for its industrial products.

The Council also elected J. Francis Strub, Vice-President of Parson & Whittemore, Inc., as its Vice-President, and Kenneth W. Lathan of Moller & Rothe, Inc. as its Secretary-Treasurer.

In addition to the officers, the new Board of Directors will include the retiring President, Frank W. Smith, Paul Harving, President of Harving Paper Co., Eli de Vries, E. de Vries Co., and Olaf Nielsen, Elof Hansson Co

Javits & Javits, 165 Broadway, New York City, will continue as legal advisers for the Council.


Can you top this PERFORMANCE?

175,200 trouble-free pumping hours

• • • This is the record set up by a Warren Single Stage, Double Suction, Centrifugal Pump at the plant of The Phenolite Company, Kennett Square, Pa. This is based upon twenty years of continuous 24-hours-a-day, 7-days-a-week service. The pump, of necessity, is located in a pit 10 feet in depth, with six inches of water in the bottom and plenty of moisture on the side-walls. A tough job, requiring a tough pump—yet over this long period the user says the only maintenance has been an occasional packing! Other Warren Pumps at Phenolite, and elsewhere, perform equally well.

If you have a pumping problem involving:

- ☐ Pulp Stocks
- ☐ Liquor Pumps in Sulphite, Soda and Kraft Mills
- ☐ Water Pumps for Mill Supply, Showers, White Water, Washdown, etc.
- ☐ Boiler Feed and all Power Plant requirements

or other services, your inquiry will receive prompt attention.

*For Greater Dependability, Longer Life, Lower Maintenance*

WARREN PUMPS

WARREN STEAM PUMP COMPANY, INC. WARREN, MASSACHUSETTS


## Westvaco Chlorine Expands

Westvaco Chlorine Products Corporation, New York, has grouped all sales department technical affairs including market development and technical service into the technical sales division, and appointed William T. Nichols, technical sales director to coordinate and expand technical sales activities. For the past several years technical assistant to the executive-vice president at Westvaco, Mr. Nichols was for eight years in charge of Research and Product Development at Westvaco's South Charleston plant.

The various activities of the technical sales division have been put under the immediate supervision of K. W. Bayha, J. M. Smith, J. M. Payne and A. George Stern, respectively.

K. W. Bayha now supervises market development work on the many new Westvaco chemicals being released, J. M. Smith continues in charge of technical service from Westvaco's New York office, while J. M. Payne continues to head technical consulting service for the middle west with headquarters at Westvaco's Chicago office.

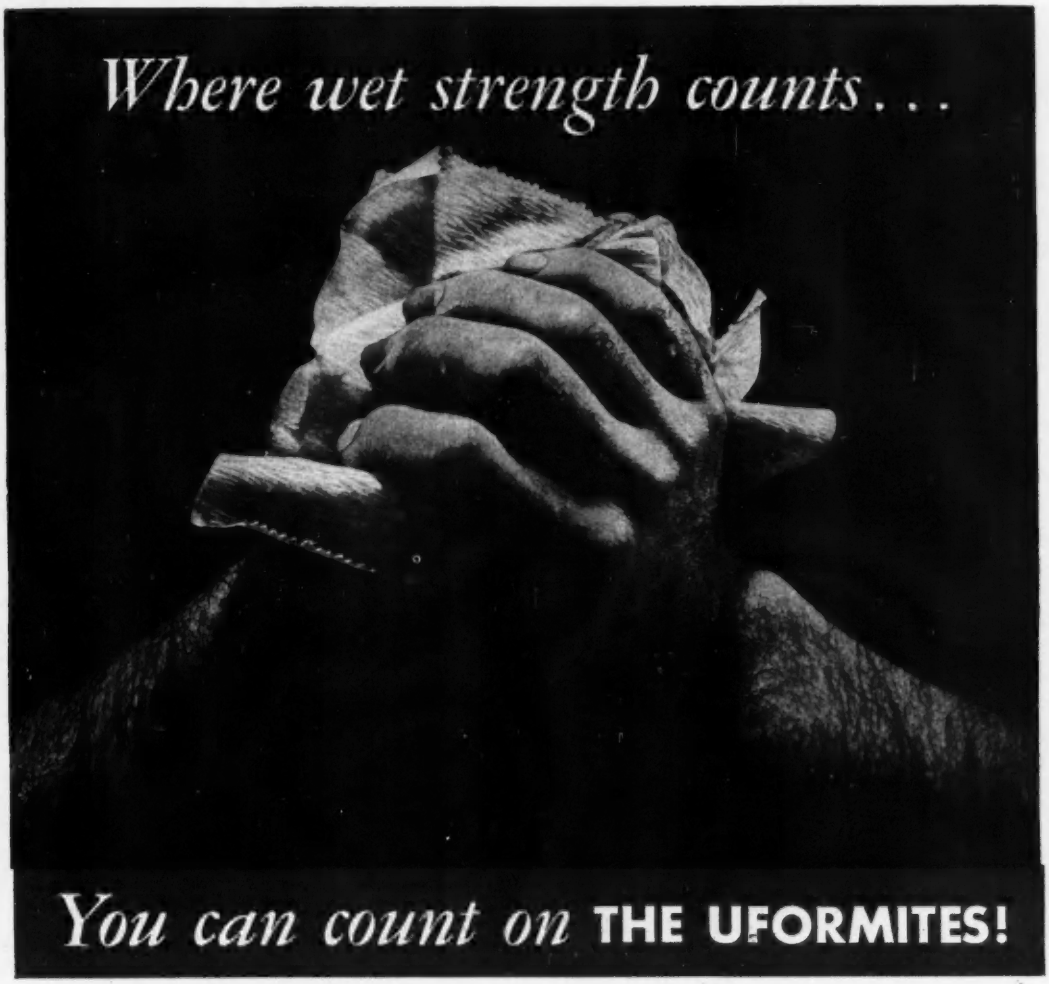
A. George Stern, who has been in charge of Westvaco's Newark, California, division of the technical department now heads up technical consulting service for the Pacific Coast with headquarters at the Newark plant.

## Westminster Plans Addition

VANCOUVER, B. C., March 16, 1946—Plans and specifications for a new $190,000 steam generating plant are now in course of preparation for the Westminster Paper Company Limited, New Westminster. President Elmer Herb states specifications are being prepared by W. O. Stevens, Seattle consulting engineer. The steam plan is estimated to cost about $190,000 in addition to expenditure of over $1,000,000 now in progress on alterations and additions to the present plant. The new steam plant will have a capacity of 40,000 pounds of steam with a pressure of 600 pounds.

Latest and most modern equipment will be installed to fill the requirements for drying paper in the new paper and converting plant. Selection of high pressure and super-heated equipment which will generate steam is expected to give the maximum amount required for the paper machines.

The steam plant will be housed in a separate structure, 90 feet by 35 feet.




**Paper toweling is just one of many applications for which Uformite 467 and Uformite 470 are especially valuable. For these urea formaldehyde resins increase wet strength easily and economically.**

**Uformite 467 is particularly designed for use with Kraft by beater addition. Uformite 470 is recommended especially for sulfite stocks but can be used effectively with Kraft, rag and groundwood—in stocks where low acidity is important.**

**Neither Uformite 467 nor 470 require any major change in your regular operating procedure. No pretreatment or special handling is required. As little as 1% resin solids on dry fibre weight will increase wet strength as much as 30%!**

**In addition to high wet strength properties, Uformite 467 and Uformite 470 improve dry tensile and Mullen, fold, uniformity of sizing, and coating surface characteristics.**

**See for yourself how these wet strength resins can increase the value of your paper production at low cost.**

UFORMITE *is a trade-mark, Reg. U. S. Pat. Off.*

# THE RESINOUS PRODUCTS & CHEMICAL COMPANY

*WASHINGTON SQUARE, PHILADELPHIA 5, PA.*

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
W. L. Cook, Editor

## PUBLIC SERVICE

So many-sided and complicated have grown the demands and the opportunities upon us all, and so silently has this state grown up with our highly developed and mechanized civilization that it is often too easy to neglect the whole in the concentrated attention that we pay to the particular. We are concerned with advances in the art; hence we omit attention to the basic facts that make an advance really something more than was available before. We accept new processes because they help us to turn out a better product at a lower cost; but the real fact that makes this profitable is the insistent demand of the public upon us for more things for better living, at a cost that the public can afford.

Essentially, then, this is more than a business or an industry which simply makes things that the public wants to buy or can be persuaded that it wants to buy. It is an industry which lives and keeps on growing because it serves a few simple but basic human needs. The art of communication, so students tell us, is at the very groundroot of advancing civilization; writing paper, book paper, newsprint thus become so tied into daily life as to be as necessary as food. Transportation, another of civilization's elemental advantages, has produced a whole train of developments in the paper industries. First was the simple fact of protection from dust; this grew to a demand for protection from damage, and insects and water. In responding to these service needs of humanity the paper industry has produced a series of materials that ranges from the first crude paper bag to the modern packing for food and munitions.

From that point onward the need for paper has entered a series of complex influences caused largely by the importance of the industries which it has made possible to create. The printer has asked for paper with certain qualities that make his work smoother or easier. The packer has asked for another paper that will help him pack and store foods more economically. Even the salesman has thrown his hat into the ring and has asked for packages that would help him move more goods more quickly.

The net of this has been to produce a whole industrial group of specialists, and this has been a beneficial factor in the industry's growth in usefulness. It also has served the end of making us forget that basically, the paper industry is pretty close to the ground in more ways than one.

Recognition of this fact, and the implications that it has for directions in which a firmer contact with public good will is to be established for the pulp and paper industry form the foundations of a broad program of improved public consciousness such as that which now is being laid before the industry. Sound public relations include both a favorable attitude that is to be produced in the nation's consciousness toward the industry, and a constantly alert attention on the part of the industry toward opportunities for public benefit.

In this light the industry can take credit for much that it has accepted, even within its own ranks, as a matter of course. Reforestation programs come to mind as an illustration, and though the movement appears to have made only a timid start toward a goal that may eventually be more national in its policies, enough has been done to warrant more than the passing attention that some may have given to it. The strong and well-planned program of Wisconsin is but a single example; other programs in other states are developing rapidly, it is reported. For its immediate goal the movement has the objective of assuring a constantly replenishing source of wood for mills in which investment is so large as to forbid the thought of their ever reducing operations. For its ultimate benefits no idealistic turn of mind is needed to see that where industry continues to flourish population continues to thrive and wealth to accumulate for future useful purpose. In the end this makes for a strong nation; it cannot do otherwise. That the paper mills which cooperate in movements of this type are guarding their own futures is no reason for them to disclaim credit for contributing also to the future of their localities. In fact, in the latter description of the program may be found an even sounder insurance for their continued profitable operation.

Much the same might be claimed on behalf of those mill projects which have opened up new territories of the country and still are exploring new possibilities. Mainly centered in southern areas where a specialized type of paper has been produced advantageously, the contribution they have made to living in rural areas can be measured only by the great totals that they have laid out for pulpwood purchases and by the totals of their respective payrolls.

Public relations, as expressive of the pulp and paper industry's relation to the nation rest on a broad and sure foundation. The improvements that have been made in individual products, in methods of producing them, in human needs that they serve; all these are of sound value from the feature story point of view. So, too, is the too-often forgotten daily importance of paper and paper making as a part of civilized economic progress.

### Calendar of Coming Events

**April 1-3, 1946—National Paper Trade Association, Annual Convention, Waldorf Astoria Hotel, New York.**

**June 17-20, 1946.—American Pulp and Paper Mill Superintendents Association, Annual Convention, Poland Springs, Me.**

## U. S. Envelope Elects Johnson

SPRINGFIELD, Mass., March 22—Eldon V. Johnson of West Granby, Conn., nationally known in the paper industry and former member of the Pulp and Paper Industry Chlorine advisory committee of the War Production board, has been elected president of the United States Envelope company here. Johnson's election was announced following a meeting of the board of directors here. Employed by the company since 1906, he had held the posts of vice-president and general manager since 1929. He managed the Springfield division from 1920 to 1944.

Former President Willard E. Swift of Worcester assumed the post of chairman of the board of directors. Others elected were vice-president in charge of production, Arthur F. Peterson; vice-president in charge of sales, Frank H. Sellars, Jr.; vice-president in charge of Pacific coast operations, Joseph S. Fairchild and assistant secretary, Luella M. Thayer. Reelected members of the executive committee of the board were Willard E. Swift, Johnson and Magnus F. Peterson. Also reelected were Vice-President Ernest M. Whitcomb; Secretary and Assistant Treasurer Harry G. Sharo and General Counsel Ralph W. Crowell. Peterson was elected treasurer and Wadleigh B. Drummond, clerk, at the annual meeting of stockholders at Portland, Me., March 8. The former positions of general manager and assistant general manager were discontinued.

## Crocker-McElwain Profits Off

HOLYOKE, Mass., March 25, 1946—Reports filed by Crocker-McElwain Co. of Holyoke for 1945 showed net sales of $2,313,773, and net profit, after all charges, of $97,593. This compared with 1944 net sales of $2,339,770, and net profit of $112,522.

## Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

| Current Weeks—1946 | | Corresponding Weeks—1945 | |
|---|---|---|---|
| February 9 | 99.7 | February 10 | 90.1 |
| February 16 | 95.0 | February 17 | 91.0 |
| February 23 | 98.0 | February 24 | 89.7 |
| March 2 | 101.8 | March 3 | 89.3 |
| March 9 | 103.4 | March 10 | 87.7 |
| March 16 | *104.1* | March 17 | 89.4 |

COMPARATIVE MONTHLY SUMMARIES

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1945 | 86.7 | 89.4 | 90.2 | 88.1 | 89.8 | 91.2 | 80.8 | 88.6 | 90.2 | 95.9 | 95.5 | 91.0 | 89.7 |
| 1946 | 94.7 | *98.4* | | | | | | | | | | | |

COMPARATIVE YEARLY SUMMARIES

| | 1939 | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 |
|---|---|---|---|---|---|---|---|---|
| Year to Date | 79.1 | 86.2 | 88.4 | 103.8 | 88.4 | 88.6 | 87.9 | *97.5* |
| Year Average | 83.4 | 85.6 | 97.4 | 90.4 | 87.8 | 88.1 | 89.7 | |

*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS†

| Current Weeks—1946 | | Corresponding Weeks—1945 | |
|---|---|---|---|
| February 9 | 97 | February 10 | 93 |
| February 16 | 94 | February 17 | 93 |
| February 23 | 97 | February 24 | 97 |
| March 2 | 98 | March 3 | 96 |
| March 9 | 99 | March 10 | 94 |
| March 16 | *100* | March 17 | 95 |

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1945 | 91 | 95 | 97 | 97 | 96 | 96 | 86 | 90 | 91 | 97 | 95 | 85 | 93 |
| 1946 | 90 | *97* | | | | | | | | | | | |

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

## NEWSPRINT MAY RISE TO $73

*(Continued from page 11)*

quarter dollar loan to Britain by Canada, it had been suggested that the British authorities might relax their austerity program and allow more Canadian newsprint to be purchased, in order to meet the insistent demand of British publishers to allow them to increase the size of daily newspapers, now restricted to four pages.

According to the Canadian Newsprint Association this is now neither feasible nor practicable. "The whole situation," says the president, Mr. Fowler, "is a financial one, as well as one of production. It was made clear last fall when the British Government cut the allowable imports of newsprint down to 50,000 tons for 1946. There is now no possibility of changing shipments this year, but what the discussion may lead to for 1947 is something else again. We shall await the British proposals and then consider both the production and the financial situations."

### Export Value Increasing

Canada's exports of non-war materials is steadily increasing month by month, and in February amounted to $153,009,000 as compared with $115,514,000 in February, 1945, an increase of 32.5%. Exports of wood and paper products were valued at $39,678,000, as compared with $33,052,000 in the same month a year ago, including newsprint exports of $17,259,000 against $11,852,000 a year ago.

### New Plans for Training Woods Labor

Due to the continuing shortage of woods labor, increasingly active steps are being taken to train new recruits. Notable among these is the establishment of a Maritime Forest Rangers' School in New Brunswick, under the auspices of the Governments of New Brunswick and Nova Scotia, and supported by lumber and pulpwood companies. Special efforts are being made to interest veterans of the war, and it is stated that a new class starting in April will consist entirely of war veterans. Both theoretical and practical training is given in all forms of logging operations.

A somewhat similar plan has been inaugurated by the Government of British Columbia, in cooperation with the Department of Veterans Affairs, and it is reported that 80% of the pupils are making good. Payment is provided while the men are gaining practical experience.

### Big Demands for Paperboard

While Canadian paperboard mills reached an all-time high in production last year, a still greater demand is now being made upon them for increased tonnage, not only for material for shipping cartons, but also for wallboards and building papers.

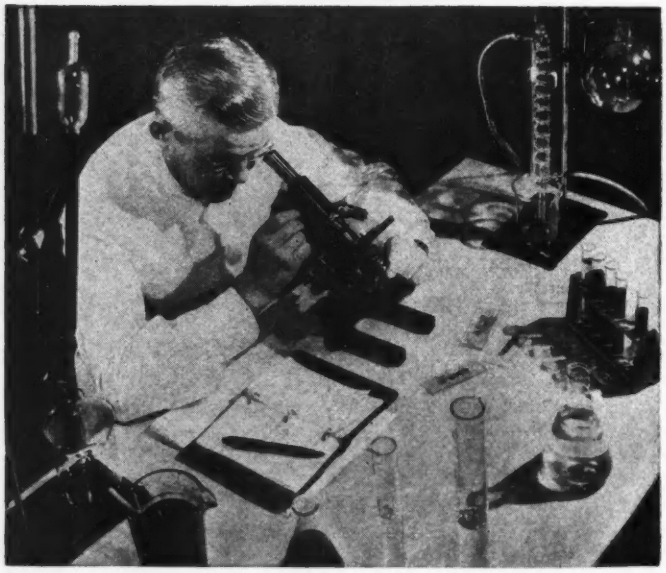
As a consequence the Emergency Salvage Committee is redoubling its efforts to speed up the salvage of waste paper for use in these mills, Roger Charbonneau, the provincial supervisor, stating that unless adequate supplies are forthcoming, manufacturers dependent on cartons for the packaging of their products may be forced to close down. Equally serious, he says, is the possible shortage of building materials, for without wallboard and building papers the whole housing program may be threatened. He described the situation as regards the salvaging and processing paper and paperboard products "critical."

# Words to the Wise Young Mill Man

From E. I du Pont de Nemours & Co. (Inc.)
Grasselli Chemicals Department
Wilmington 98, Delaware

**1 NO CRYSTAL BALL CAN TELL YOU** what your future holds but you can depend on this: papermaking will continue to be an essential skill. Pick up all the know-how you can if you plan to continue in this all-important industry.

**2 "GROW OLD WITH THE MILL,"** papermakers counsel their best young men, "and you will grow well." Many of Paper's top men started as cutter-boys and broke pickers. Another good rule: if some angle of the business is too complex to master, go to an expert for help. In chemistry, that's Du Pont.



**3 TO PAPERMAKERS,** Du Pont offers helpful technical information and a few selected products. One of these is "Lignasan" bactericide and fungicide. "Lignasan" is a chemical agent for the control of slime. It can be bled into the system at trouble spots, or added at the beater—about four ounces per ton of dry fiber. 'Most any old-timer in papermaking can tell you all about it, or you can check with your Du Pont man.

**Du Pont Lignasan**
REG. U. S. PAT. OFF.
*Bactericide and Fungicide*
CONTROLS SLIME—PRESERVES PULP

BETTER THINGS FOR BETTER LIVING
*...THROUGH CHEMISTRY*

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Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

# Film Properties and Utilization of Resin–Starch*

By C. C. Kesler [1], J. E. Killinger [2], and E. T. Hjermstad [3]

**Abstract**

*Studies of moisture sorption and shrinkage on drying of films of starch and other materials showed that though the amount of shrinkage is limited to some extent by the moisture retained, wide variations in shrinkage were observed by materials whose films may retain approximately the same percentage of moisture. High shrinkage values were obtained with starches from which amylose may be obtained, and low values from starches which yield little or no amylose upon fractionation. Treatment of corn starches with urea formaldeyhde resin reduced shrinkage of their films, depending on the amount of resin used.*

*The use of the starch-resin reaction product resulted in a number of advantages. Coating, tub, and calender sizing operations verify the validity of film studies as a measure of the suitability of materials for the production of desirable end uses. Clay coatings gave good wax tests and printability, high gloss, and if desired, increased coating weights. Actual tub sizing operations showed increased bursting strength and fold resistance, greatly increased porosity and oil absorption values, higher gloss and smoothness, and improved erasure and pen and ink values. Calender applications where less pick-up results gave improved surface characteristics with pronounced improvement in scuff test both wet and dry.*

Starch and starch modifications are being used successfully for paper coating, tub sizing, and calender sizing of paper, although there is still a definite need of improvement. It is always to be desired that through a detailed study of the physical and chemical fundamentals of any commercial process, higher levels of quality and greater utility of the resulting product may be ultimately accomplished. The information presented in this and a previous paper *(1)*, while far from a complete study of all fundamentals involved in surface coating of paper, may throw some light on certain phases of this problem.

Starch in its unmodified state possesses many of the properties which make it useful as an adhesive or bonding agent. Certain chemical and physical alterations are necessary in order to make it suitable for paper coating. Excellent results have been attained in adjusting starch to the range of consistencies required in various coating operations, in preventing set-back of certain varieties, and increasing adhesive power. There are, however, certain inherent properties of corn starch and other varieties which are undesirable in sizing and coating operations. The amylose, or straight chain fraction, often contributes undesirable gelling and retrograding characteristics *(2)*, all varieties of starch, when pasted and dried, are extremely brittle and apparently low in tensile strength at low humidities, all starch films are greatly weakened by contact with water, and films of many varieties shrink excessively on drying. These and other characteristics make it desirable that economical methods be developed to correct them, since starch is, after all, probably the best low cost bonding agent for paper coating.

## Shrinkage and Moisture Sorption Studies

Since practically all uses of starch in the manufacture of paper products involve drying of a more or less dispersed starch base material, its ultimate utility depends upon what takes place during the drying and its filming properties. Shrinkage as a measure of internal attractions offers an approach which we believe is fundamental.

In a previous paper *(1)*, the authors presented a new method for measuring the free shrinkage of drying films. The studies on the shrinkage of starch films have been continued and additional data can now be presented. This technique of shrinkage measurement has been revised to some extent.

### Improved Procedure for Measuring Shrinkage

Pastes were spread on Orsat gas bags inflated to a diameter of 9 cm. and attached to the combination water reservoir and manometer as shown on page 58, *Paper Trade J.*, Vol. 120, No. 16, Apr. 19, 1944. Uniform results by this method are possible only if films of approximately the same dry weight and thickness are produced. Since starches and other organic film forming materials vary considerably in viscosity and gelling characteristics, it was necessary to cook them in different solids concentrations in order that the same dry weight of material could be applied on the balloon. It was determined that 0.9 gram of dry film on the balloon gave reasonably high shrinkage readings for all film-forming materials tested without exceeding the capacity of the balloon to contract and remain fairly spherical. The solids

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

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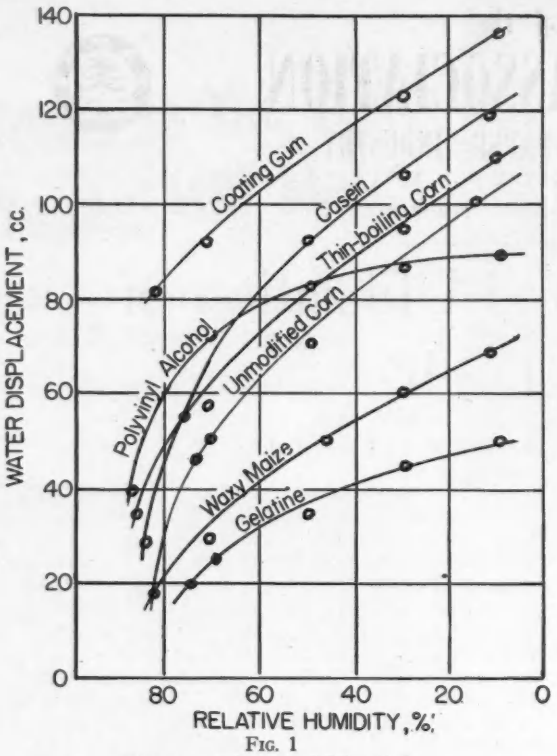


FIG. 1
**Shrinkage of Starch and Other Films**

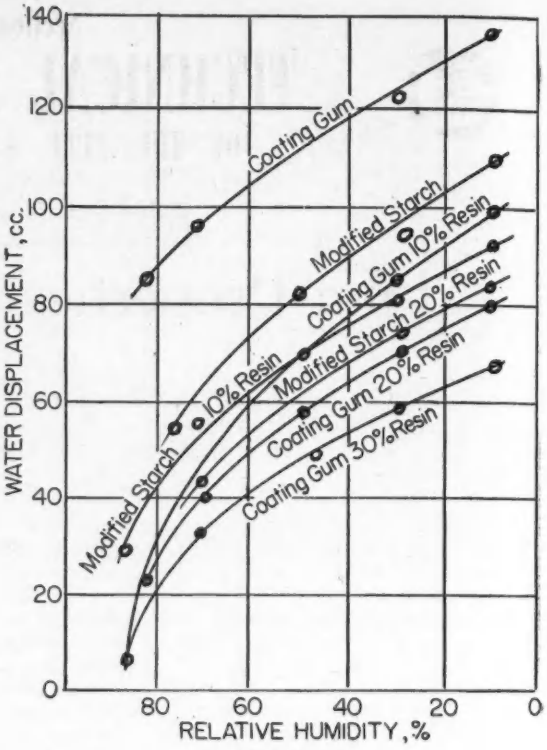


FIG. 2
**Shrinkage of Starch and Resin-Starch Films**

concentration necessary to allow this weight of dry material to be applied on the balloon was established. The materials tested, solids concentration, cooking time, and cooking temperature are given below in Table I.

TABLE I

| Material | Solids Concentration, % | Weight of Wet Film, grams | Cooking Temperature, °F. | Cooking Time, min. |
|---|---|---|---|---|
| Unmodified corn starch..... | 5 | 18 | 190 | 15 |
| Med. fluidity thin boiling corn starch ..... | 10 | 9 | 190 | 15 |
| Hypochlorite oxidized corn starch | 20 | 4.5 | 190 | 15 |
| British gum ..... | 25 | 3.6 | 190 | 15 |
| Unmodified waxy maize starch.. | 5 | 18 | 190 | 15 |
| Unmodified tapioca starch..... | 5 | 18 | 190 | 15 |
| Unmodified potato starch..... | 5 | 18 | 190 | 15 |
| Polyvinyl alcohol (med. viscosity) | 10 | 9 | 140 | 15 |
| Gelatin (bacteriological grade).. | 10 | 9 | 160 | 15 |
| Casein (alkaline dispersion)..... | 10 | 9 | 140 | 15 |
| Corn dextrin (80% soluble)..... | 30 | 3 | 190 | 15 |
| Coating resin-starch ..... | 25 | 3.6 | 190 | 15 |
| Resin thin-boiling starch..... | 10 | 9 | 190 | 15 |

The material to be tested is cooked in the proper concentration and allowed to cool to 80° F. The inflated balloon is dipped in the paste until uniformly covered, and the excess paste shaken off as rapidly as possible until the required wet weight remains, as determined by hanging the tared balloon on a balance. If the paste remaining has a tendency to flow, the balloon must be attached to a slow speed motor and rotated on a horizontal axis at from 10 to 15 r.p.m. until dried sufficiently to prevent flow, but still moist to the touch. By this means fairly uniform films are obtained. The balloon is then attached to the combination water reservoir and manometer, and allowed to dry at different humidities at a constant temperature of 80° F. The number of cubic centimeters of water displaced can be taken as a measure of the shrinkage, or this value may be converted to per cent volume shrinkage, per cent area shrinkage, or per cent linear shrinkage. The results of numerous determinations by this method indicate that shrinkage values obtained do not vary more than plus or minus 10%, and usually the difference is much less. The results of shrinkage determinations on various starch modifications and on a few other organic materials are shown in Figs. 1 and 2.

### Measurement of Moisture Sorption of Films

*Preparation of films.* Starch and other materials were cooked under the conditions specified in Table I and enough paste pipetted on cellulose acetate sheets to give approximately 0.1 gram of dry material. This paste was spread to cover a 3 inch circle and dried at room conditions. When dry the films were broken and shredded into small particles and placed in weighed aluminum moisture dishes with moisture tight covers. (Flour moisture dishes specified by the American Association of Cereal Chemists).

*Determination of Moisture Desorption.* The open dishes containing the shredded, thin films were placed in a closed jar over water at room temperature to allow them to pick up an excess of moisture. They were then moved to successively lower humidities and allowed to come to constant weight in each humidity. The humidities were maintained by different saturated salt solutions held at a temperature of 80° F. After the weight at the lowest humidity had been determined the films were dried to constant weight in a vacuum oven at 230°F. and the moisture-free weight determined. From these values the moisture per cent on a dry substance basis was calculated and moisture desorption curves plotted as shown in Figs. 3 and 4.

*Determination of Moisture Adsorption.* After drying to constant weight in the vacuum oven at 230° F. the open dishes were placed in successively higher humidities and allowed to come to constant weight at each humidity. From these values the moisture per

cent on a dry substance basis was calculated and moisture adsorption curves plotted as shown in Fig. 4.

### Relation of Shrinkage to Moisture Content of Films

Moisture sorption determinations were run on the same materials tested for shrinkage in order to determine the extent to which shrinkage is limited by moisture content. According to the shrinkage data obtained, film forming materials tested shrunk considerably on drying. The total amount of shrinkage of a given material depended on the humidity at which the films were dried or the resulting moisture content. For the several varieties and modifications of starch tested, approximately parallel curves were obtained when shrinkage was plotted against relative humidity, but the magnitude of shrinkage of different starch films dried at the same humidity showed some striking differences. Corn, tapioca, and potato starch films shrank about the same at all humidities tried, but waxy maize shrank considerably less. Hypochlorite oxidized corn starch, many pyrodextrins, and high soluble corn dextrins had low shrinkage values compared to unmodified corn starch and the other varieties tested. Acid modified thin boiling corn starches had a somewhat higher shrinkage at all humidities. Alkaline dispersed casein had a high shrinkage value. Polyvinyl alcohol had a higher rate of shrinkage at high humidities but a lower total amount at low humidities than corn, tapioca, and potato starch films. The results obtained with waxy maize and hypochlorite oxidized starches from which little amylose can be obtained, would seem to indicate that starches yielding amylose fractions contribute to higher shrinkage on drying to a film than do products giving negligible amylose upon fractionation.

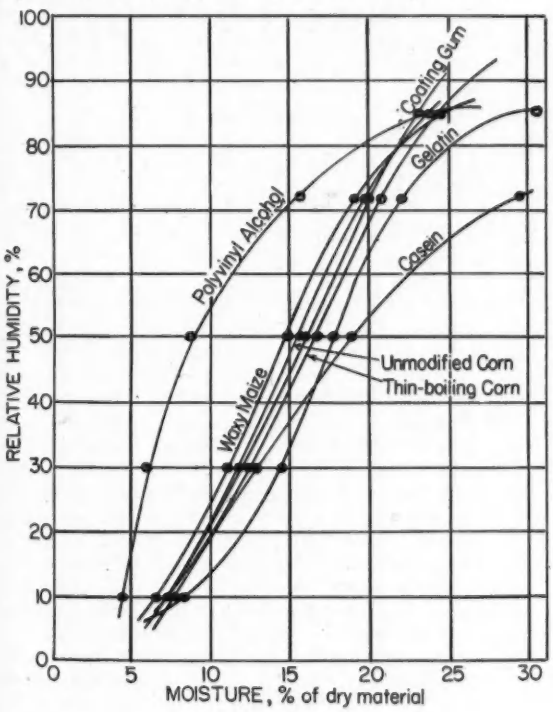


FIG. 3
**Moisture Desorption of Starch and Other Films**

The percentage moisture content of a film determines the extent to which it will shrink on drying. However, the amount of shrinkage of a given material may be much higher or lower than that of another material which retains almost identically the same percentage of moisture throughout a wide range of humidities. The different varieties of starches, when gelatinized and dried as films retain about the same percentage of moisture at from 85 to 10% relative humidity. This agrees with the data of Sair and Fetzer *(3)*. Waxy maize, which yields negligible amylose or straight chain fraction, shrinks considerably less. Various modified starches and other organic materials were found to retain the same percentage of moisture, especially at low humidities, yet the total amount of shrinkage at low humidities varied widely. This indicates that moisture is not the only factor involved in the shrinkage of drying films. The indication that starches yielding the amylose fraction contribute to greater shrinkage would suggest that a film containing straight chain polymers allows a denser packing or drawing together of the chains as moisture is removed, than is the case with branched chains. This is further indicated by the high shrinkage at high humidities of polyvinyl alcohol which contains straight chains, although this may result from a different moisture equilibrium. Additional evidence is the action of urea formaldehyde resins to reduce the shrinkage of starch films as shown in Fig. 2. When a modified corn starch is cooked in an acid condition with a urea formaldehyde resin, the resulting paste forms films with lower shrinkage values than films of the starch alone. The degree of shrinkage depends on the amount of resin used. As indicated in Fig. 4, the percentage moisture retained over a wide range of humidities is approximately the same for films of starch alone and those of urea formaldehyde resin treatment. Since the lowered shrinkage is not due to plasticization by moisture, it appears that the resin has changed the starch to a more highly branched material, probably the amylose being affected, since gell-

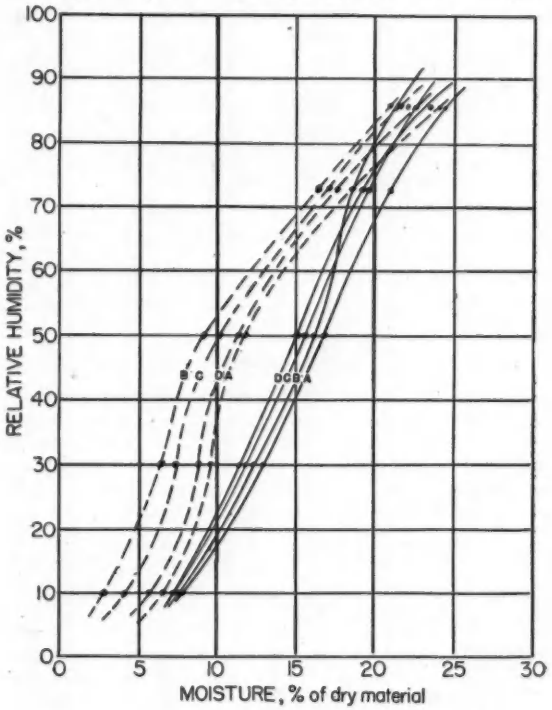


FIG. 4
**Moisture Sorption of Resin-Starches. Solid Line: Desorption Curve; Dotted Line: Adsorption Curve. A—Thin-Boiling Corn Starch. B—Coating Starch, 20% Resin. C—Thin-Boiling Corn Starch, 20% Resin. D—Coating Starch**

ing and retrograding properties are greatly reduced by this treatment.

Another indication of the effect of the resin on the starch is the increased hysteresis of moisture sorption of the moisture-free films of starch-resin as against those of starch alone. The moisture desorption before vacuum drying and adsorption after drying of starch is shown in Fig. 4. Increasing amounts of resin decreased the per cent of moisture regained after vacuum drying. This may indicate a condensation of the resin with the hydrophilic groups in the starch thus preventing adsorption of water molecules on these groups, giving a partial stabilization *(4)*.

## Practical Applications

Corn starches treated so that the films made from them exhibit a minimum shrinkage have desirable properties for the production of coatings, adhesives, and surface sizes. The advantages noted in such adhesives are increased cohesiveness, less retrogradation or gelling, less wetting into the base stock, higher gloss, and improved spreadability.

For coating, a starch or gum is used that has only a minimum of cold water soluble content so that the maximum of adhesive strength is preserved and the properties that have limited their use is modified by the reaction with resins. The different requirements for coatings of low, medium, or high density will not be reviewed here as the recent literature *(5, 6)* and contemplated publications *(7)* cover this subject in detail. It may be said that starch-resin reaction products can be made to give improved brushability, reduce dusting to a minimum on the calenders, good wax tests, good printability, and high gloss.

The increase in cohesivesness of all starches after reacting with resins is manifested in the deposition of higher coating weights. Starch-resin coatings in actual mill comparisons of equal solids coatings and the same machine settings showed a substantial increase in coating weights.

The small percentage of resin sufficient to bring about the colloidal change in the starch will impart little or no water resistance to the finished coating. This is quite understandable when one considers the small amount of resin the reacted starch process contributes to the coating solids as a whole.

Where additional water resistance or increased washability is desired, unreacted resins may be added to the finished coating mixture. Where subsequent additions of resin are made for this purpose the pH of the finished coating will, of course, be maintained on the acid side.

## Tub Sizing

Actual tub sizing operation employing sizes prepared from medium viscosity starches and urea resin has shown some very remarkable results, e.g., a starch hydrated in the presence of 10% resin in a 10% concentration and subsequently diluted to 5% total solids gave results as tabulated in Table II.

TABLE II.—SIZE PRESS APPLICATION

| Test | Starch Alone, % of Standard | Starch-Resin, % of Standard | Per Cent Increase or Decrease |
|---|---|---|---|
| Bursting strength | 80 | 100 | + 20 |
| Tear—with | 117 | 115 | — 2 |
| Tear—across | 124 | 122 | — 2 |
| Fold—with | 30 | 50 | + 66 |
| Fold—across | 25 | 90 | +260 |
| Porosity | 57 | 83 | + 45 |
| Oil adsorption | 73 | 180 | +146 |
| Gurley—felt | 115 | 127 | + 1 |
| Gurley—wire | 97 | 130 | + 34 |
| Brightness | 108 | 110 | + 2 |
| Gloss—felt | 98 | 100 | + 2 |
| Gloss—wire | 96 | 101 | + 5 |

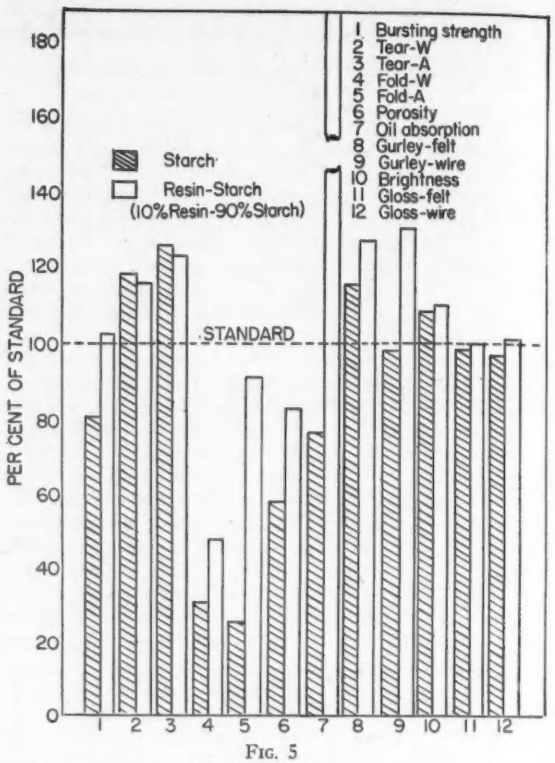


FIG. 5
Size Press Application

Figure 5 is plotted in terms of the per cent of standard. On the graph, standard is 100 and the values shown are obtained by dividing the actual value determined by the standard for this particular grade. An examination of these data shows a pronounced increase in dry bursting strength. This increase in burst is somewhat unusual particularly when tear values are considered along with bursting strength. Actually very little decrease in tear accompanies the bursting strength increase. Other data have at times shown both increase in burst and tear. The fold with machine direction has been increased somewhat while the fold across machine direction was increased to a higher degree than was anticipated. Another very interesting comparison may be made with reference to oil absorption and porosity values. The lowered tendency toward film shrinkage, it is believed, may explain the pronounced increase in values. Improvements in smoothness, brightness, and gloss were not unexpected because laboratory comparisons of films drawn on paper had shown very definitely that the resin-starch produces films or surface coverages which are more continuous and far more glossy than films made from the same starch not reacted with resins.

To date tub sizing comparisons have been made at several mills where quite widely differing starches were employed. In each case the reacted starch showed substantially the same increased advantages.

## Wet End Additions

It was contemplated to include some experience gained by the addition of resin-starch to the wet web before any drying was accomplished. Regrettably, time has not permitted the completion of these data. It would appear that reacted starch and resin may be expected to show some unusual internal sizing values, particularly with reference to improved wet strength.

Application at this point would reduce to a minimum loss of resin and starch since the application would be made after the sheet has passed the presses.

### Calender Application

The excellent results obtained in the tub indicated further application on the calenders for improving surface characteristics of board. Starches exhibiting the proper viscosity are reacted with resins and applied to the stacks in concentrations up to 20% total solids. The percentage of resin may be varied widely. Five to twenty per cent based on the dry weight of the starch gave, in actual operation, decided improvements. The reaction product made with quite high percentages of resin has a consistency range of the base starch, and remains so over a wide pH range and for prolonged periods. It was found that substantial increases in both wet and dry rub values were obtained on kraft board. The resistance to turpentine, lard, and tall oil absorption was greatly increased. The starch when properly reacted may be incorporated with other adjuncts often used with starches as prepared for sizing.

The changes in physical and colloidal properties obtained by reaction with resin indicate that the use of this type of starch will be found to be quite advantageous not only in coating and sizing operations but in adhesive and film applications not necessarily limited to paper manufacture or paper conversion.

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# Compression Resistance of Paperboard

## (Ring Crush Test)

### TAPPI Tentative Standard T 472 m-46

This test measures the resistance of paperboard to edgewise compression. Corrugated and solid fiberboard containers are subjected to crushing forces in shipment and this test is used for two purposes: (1) to indicate edgewise rigidity of the board so that manufacturing processes may be controlled to secure the desired results, and (2) to intimate the probable crushing resistance of the finished container such as determined by TAPPI Standard T 804 M.

This method is intended only for paperboard less than 0.030 inch thick.

### Apparatus

1. *Compression Machine.* The apparatus is essentially a compression testing machine having an upper and lower platen which are held rigidly parallel during the test, permitting movement in a vertical direction only. The speed of the moving platen shall be $\frac{1}{2} \pm \frac{1}{8}$ inch per minute. The apparatus shall be equipped with means for estimating the maximum applied load to within ¼ pound. The dial preferably should be provided with a lazy hand which will accurately come to rest at the maximum load. The indicating mechanism shall be such that it can be accurately checked by dead-weight loads.

2. *Specimen Holder.* At the center of the lower platen of the compression tester there shall be positioned a specimen holder comprising a plate with an annular groove or hole 0.25 inch deep, and 0.625 inch outside diameter for the smaller specimen, and 2.00 inches diameter for the larger specimen. For convenient insertion of the specimen, the holder may be divided along its center and provided with a hinge at one end to permit the holder to open and close over the bottom of the specimen, the holder being secured shut during the test by a latch or spring at the other end, or a rubber band or spring placed around the circumference of the holder.

3. *Cutting Device.* A cutting device or means of accurately cutting the specimen to exact dimensions without any tearing of the edges. Tearing of edges may not be easily apparent but it affects the test results. A die cutter is preferable, but a template and a sharp knife and hardwood block will serve.

### Test Specimen

For boards less than 0.020 inch (0.5 mm.) in thickness, specimens shall be cut 0.5 inch (12.7 mm.) wide and slightly less than 2 inches (51 mm.) long. For materials 0.20 inch and over in thickness, specimens shall be cut 0.5 inch wide and 6 inches (152 mm.) long. Cut at least five specimens from each principal direction of the board.

*Note:* It is important not only that the edges of each cut specimen shall be parallel, but that the long axis be truly parallel (or perpedicular) to the machine direction of the paperboard.

### Procedure

Condition the specimens in accordance with TAPPI Standard T 402 m and carry out the test under the same atmospheric conditions.

Insert each specimen in the form of a ring or tube in its holder and position the specimen at the center between the two platens. Apply the crushing load to the end of the specimen ring until failure occurs. Record the maximum load. Test at least five specimens, cut from each principal direction of the board.

### Report

Report the average load required to crush the sample, in each direction, in pounds to the nearest 0.1 pound, and state the ring diameter used.

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## Guide to Southern Trees

The McGraw-Hill Publishing Company has recently issued a Guide to Southern Trees, by Ellwood S. and J. George Harrar of Duke University. (712 pp. 4½ x 7). More than 350 species of trees are described with minimum use of technical terminology. The southern pines consist of four genera and about 16 species. Each type is catalogued according to habit, leaves, flowers, cones, twigs, bark, habitat, distribution and importance. Both conifers and broadleaf trees are described.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York 17, N. Y., at $4.50 per copy.

# Industrial Uses of Alkali Lignin*

By E. B. Brookbank[1]


## Abstract

*In considering uses for alkali lignin, knowledge of its physical and chemical properties suggests a number of possibilities. It has been extensively studied as an ingredient of thermosetting phenolic resin compounds. Various methods for incorporation of the lignin into the resin have been studied, but with few exceptions, all efforts have resulted in a small but definite decrease in the quality of the finished product, without materially reducing cost.*

*This lignin is extensively used as the organic expander in the negative plates of lead-acid storage batteries. Today, the majority of the automobile batteries manufactured in the United States use this material, with marked success.*

*It is effective as an emulsifier for asphalts and is compatible with asphalts of certain types to a high degree. It has been used successfully for the preparation of asphalt emulsions, and when added to high-melting asphalts in small amounts, materially reduces cold flow.*

*Many other possible uses for alkali lignin have been explored or are in course of development. A few of these are: in printing inks, as a carrier for insecticides, as a means of conditioning boiler water for the prevention of scale and caustic embrittlement, and as a medium for removing iron from water supplies.*


Alkali lignin has been produced on a semicommercial scale under the trade-name of Meadol for approximately 10 years. During that period it has been evaluated and tested for a considerable number of industrial uses. For some of these, it has proven to be entirely satisfactory while for others, its use results in properties which are border-line between acceptable and nonacceptable performance. It is the purpose of this paper to briefly summarize a few of the present and potential industrial uses for this product.

The term alkali lignin has been used in the literature to designate the product obtained by acidulation of the alkaline black liquors from the soda pulping process. Such lignin contains all organic matter which is precipitated by mineral acids and is somewhat heterogeneous in nature. In contrast, Meadol is obtained by fractional precipitation of the hardwood soda black liquor with carbon dioxide *(3)*.

Alkali lignin is a complex mixture of closely related compounds of similar chemical structure but of unknown constitution. The efforts of numerous research chemists over a period of several decades has not solved the lignin riddle although considerable knowledge has been gained about the characteristic groups in the molecule *(8)*. This lignin has an apparent molecular weight of 870 for each repeating building unit in the polymer. For each of these units there are six methoxyl groups and five free hydroxyl groups. The chemical reactivity of the molecule centers around reactions which involve one or more of these hydroxyl groups. These groups seem to differ in their degree of reactivity and one of them is definitely acidic in nature, probably either phenolic or enolic, and is capable of forming salts with metals. Of the other four hydroxyl groups, three apparently possess about equal reactivity and are probably primary alcohols. The last is somewhat less reactive and is probably a secondary alcohol.

In addition to chemical reactions which involve the hydroxyl groups, alkali lignin will undergo other reactions which involve other reactive points of the molecule. It may be chlorinated, nitrated, hydrogenated, and will undergo condensation reactions with such compounds as aniline and formamide. It will also form complexes with proteins of certain types.

Compared to other chemical materials, lignin is quite inert. The lignin is thermoplastic with a melting point of about 210° C., but this melting behavior is not completely reversible. Moisture acts as a plasticizer and 10 to 12% water will depress the melting point to about 170° C. The moisture-free melting point correlates with the amount of ash in the product; the lower the ash content, the lower the melting point. The minimum moisture-free melting point on carefully purified, ash-free alkali lignin is 190° C. The decomposition temperature is approximately 230° C. and a considerable quantity of gaseous products of decomposition are formed. An increase in ash content tends to raise this decomposition temperature. It is insoluble in nonpolar solvents and soluble to varying degrees in polar solvents. The most effective solvents are alkalies, pyridine, dioxane, and a mixture of equal parts by volume of acetone and methanol.

## Uses

### Plastics

In considering uses for this material, knowledge of its physical and chemical properties suggests a number of possibilities. For example, the presence of reactive hydroxyl groups gave considerable impetus to study for plastic applications *(10)*. It has been extensively investigated as an ingredient of thermosetting phenolic resins. Various methods of incorporation of the lignin into the resin have been considered, with varying degrees of success.

An investigation was made in which lignin was added directly to the resin kettle during the manufacture of the phenol-aldehyde compound. This method permits close control of uniformity, and is the best approach now known for the extension of phenolic molding compounds with lignin. To study this still further, limited experiments are being conducted in which alkali lignin is condensed with phenol by a catalytic chemical reaction involving the use of anhydrous materials. This product is a definite derivative of lignin in which two molecules of phenol are attached to each lignin building unit. Little is known of the molding behavior of this derivative, as the work is incomplete at this time.

In general, all efforts result in a slight decrease in the quality of the finished product. This is manifested particularly with respect to water absorption and mechanical strength. Resin flow is somewhat stiffer and slightly longer curing times are required. Even so, such compounds are adequately strong and sufficiently water resistant for many uses.

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

[1] Member TAPPI; Development Dept., The Mead Corp., Chillicothe, Ohio.

A considerable amount of work has been done to incorporate alkali lignin and other lignins into paper-base plastics for lamination of flat panels *(14)*. In this case, the lignin is dissolved in the resin varnish, which is then used to impregnate an absorbent paper, or lignin is added as a filler to the paper on the paper machine, and this combination later impregnated with phenolic resin varnish. Physical properties of some of these laminates have been every bit as acceptable as those obtained with straight phenolic varnishes. Here, the lignin serves a further purpose in that it makes the saturated paper less tacky during the drying operation and thus prevents build-up of resin on drier rolls. Similar studies have been made on pulp molding operations, but here a general but small decrease in mechanical strength has been observed *(13)*.

### Storage Batteries

Alkali lignin has been extensively used as the organic expander in the negative plates of storage batteries *(18)*. Today, the majority of the automobile batteries manufactured in the United States use this material. The action of the lignin in the batteries is not completely understood. Apparently, it inhibits the formation of lead sulphate crystals on the lead particles of the negative plate during discharge, and thus serves to increase discharge capacity as much as 300%. This beneficial action is particularly effective at low temperatures. In practice, from 0.2 to 1.0% of alkali lignin is mixed with litharge, carbon black, and barium sulphate, followed by pasting to lead grids and assembly of the battery in the conventional manner. In this application, the stability of the lignin to battery acid is of prime importance.

### Emulsifier

It is effective as an emulsifier for asphalts and is compatible with asphalts of certain types to a fairly high degree. When used in conjunction with tall oil soaps, it produces emulsions of greater stability than can be obtained with soap type emulsifiers alone. Further, by proper formulation, the demulsibility of these emulsions may be adjusted to any desired value, thus greatly extending the field of usefulness of these systems. This may find future application in the manufacture of paving asphalt emulsions and it is possible that such emulsions might also prove useful in the sizing of paperboard.

When added to high melting asphalts in small amounts, it reduces the amount of cold flow. This suggests its use with this material for cheap thermoplastic molding compounds.

Other possible uses for lignin depend on its base exchange properties. Some of these are as a carrier for insecticides, as a means of conditioning boiler water for the prevention of scale and caustic embrittlement *(1)*, as a method for removing iron from industrial water supplies *(11, 12)*, and as a dispersing agent for oil well drilling muds *(19)*. It may also be used for ion-exchange water softening, since the lignin has a good affinity for both calcium and magnesium, and regeneration may be accomplished with any mineral acid. While none of the above uses have reached a commercial scale, all are currently receiving careful study on a semicommercial or pilot plant scale.

Other uses which have been suggested are for such things as flotation agents, grinding aids, adhesives, and core binders. Some of these uses are ruled out by economic considerations at the present time. At such time as alkali lignin can be produced on a sufficient scale to justify a marked reduction in its selling price, these fields will open up to a marked extent. *(5, 9, 15)*. Estimates of manufacturing costs projected to a manufacturing scale of several tons per day indicate that a marked price reduction is entirely feasible.

### Enzymes

Since lignin will form association complexes with proteins, it has been studied as a means for the quantitative separation of mold protease enzyme from the original cultures *(16)*. Enzymatic activity is not impaired after regeneration of the protease. This work has not passed beyond a laboratory stage but indications are that such a process would be entirely practical on a larger scale and may result in appreciable savings over the methods of separation currently used. These studies have recently been extended to cover malt and mold amylase with gratifying results. Almost complete recovery is achieved in terms of the original enzyme when the determination is carried out at a pH at which the enzyme lignin is fully dissociated and thus completely reactivated (pH 6.5 or higher).

This reaction between lignin and proteins has also been suggested as a means of removing wheat proteins from fermentation residues *(6)*. Precipitation of the protein is almost quantitative, filtration is rapid, and elimination of insolubles and colloidal solubles may be achieved. The filter cake has value as a cattle feed, while the resulting liquor residue, which contains unfermented sugars and small amounts of nitrogenous material, may be utilized for producing protein in the form of yeast. The utilization of the stillage is thereby made more complete and feeding materials of high nutritive value are produced. The effluent, after yeast growth shows less than half the biological oxygen demand of the original stillage.

### Organics

Hydrogenation of alkali lignin leads to a variety of products, such as methanol, methane, neutral oxygenated oils, acidic tars and hydro-carbons *(7)*. Since coal is a cheaper starting material and yields similar products, the outlook for this form of commercial lignin utiliation is not very encouraging.

The foregoing uses are based on lignin as it is currently manufactured. It is possible to carry out additional chemical reactions to form salts of most of the metals and many of these compounds have been prepared. The copper salt is currently being studied as a fungicide, while the lead salt serves as an intermediate in the preparation of lignin ethers. Salts of the alkalies of Group I in the Periodic Table are water-soluble, while others are completely insoluble in water and in organic solvents. These metal salts do not show a melting point but decompose on heating to temperatures in the neighborhood of 300 to 350° C.

The lignin may also be esterified or etherified *(2, 4)*. A considerable number of alkyl esters and ethers have been prepared on a laboratory scale. Melting and solubility characteristics of these products can be varied over a wide range by proper selection of the alkyl radical. When substituent groups of high molecular weight such as the stearyl radical are used, the resulting products possess waxy characteristics which may be of definite commercial interest for lubricating greases and as lubricants for thermosetting molding compositions. These modified solu-

bility characteristics, and the increased range of compatibilities resulting will suggest still other uses.

While many of these uses are new and have not yet reached a stage which can be clasified as industrial, development work is proceeding on them and the future may see a considerably wider market for lignins of this type.

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## TAPPI Notes

Hobart L. Geer, formerly of the Philco Radio and Television Corporation is now in the technical department of W. C. Hamilton & Sons, Miquon, Pa.

Raymond P. McGinley, formerly of W. C. Hamilton & Sons is now research and development engineer for the Dilts Machine Work, Fulton, N. Y.

The Rogers Corporation, Manchester, Conn. is now a corporate member of the Technical Association of the Pulp and Paper Industry and will be represented by S. A. Brown, Vice President.

Stanley J. Leishman, formerly of the Ryegate Paper Company is now paper mill superintendent of the Dill & Collins Div., Mead Corporation, Philadelphia, Pa.

William Tibell, production manager and Rutger Larson, chemist for Papyrus A/B, Molndal, Sweden, are visiting in the United States.

R. Grierson, chief engineer of R. A. Brand & Co. Ltd., Manchester, England, is visiting in the U.S.A.

T. Linsey Crossley, who has during the war, been in charge of the training and technical library at de Salaberry Works of Defense Industries, Ltd. Nitro, Que., was the recipient of a trophy at the ceremonies of closing the technical department. After a short vacation Mr. Crossley plans to resume his consulting work in Toronto.

The TAPPI Ohio Section will meet jointly with the Miami Valley Division of the Superintendents Association at the Manchester Hotel, Middletown, Ohio, on April 13th. Following the dinner there will be a round table discussion regarding the curling of paper. R. A. Steffen of the Champion Paper & Fibre Company will discuss Types of Paper Curl and Their Causes. Val Friedrich of the Beckett Paper Company will talk on Factors Influencing Paper Curl and W. E. Sooy of the Gardner-Richardson Company will discuss Paper Curl in Board.



The Chicago Professional Paper Group will meet at the Chicago Bar Association on Monday, April 15 at 6:30 p.m. There will be a panel discussion on "Weathering the Starch Crisis". Members of the panel will include: J. V. Bauer, Stein, Hall & Co.; E. S. Gantt, Corn Products Refining Company; L. J. Hayhurst, Hayhurst Research Laboratory; J. E. Killinger, Penick & Ford; Fred Sanders, National Starch Products Co.; Don Thom, F. G. Findley Co., and W. E. Morton, American Bitumels Co. At the meeting held on March 18th, D. C. Donaldson of the Eastman Kodak Company showed the new sound film on Modern Photo Engraving.

## New England TAPPI Discusses Drying

The New England Section of the Technical Association of the Pulp and Paper Industry met at the Roger Smith Hotel, Holyoke, Mass., on Friday evening, March 22nd. L. B. Tucker of Crane & Co., Dalton, Mass. presided as chairman.

Mr. Tucker appointed a nominating committee consisting of Ray Kilty, Staley Sales Company, Joseph Constance, Millers Falls Paper Company and P. Gooding of the Strathmore Paper Company to prepare a slate prior to the next meeting at the Weldon Hotel, Greenfield, Mass., on May 17-18.

R. G. Macdonald, Secretary of TAPPI gave a short resume of some of the details of the recent annual meeting of the Association and told about the progress being made in working out closer relations between the local sections and the national organization.

Werner Kaufmann, Chairman of the TAPPI Coating Committee introduced the speaker of the evening Herman G. Rappolt of the J. O. Ross Engineering Corporation who talked on Developments in Drying Equipment for the Coating of Paper.

In this talk Mr. Rappolt pointed out the trend toward high speed coating both on the paper machine and as an independent operation.

Those present included: R. A. Bagg, N. I. Bearse, R. F. Blount, H. A. Bolles, P. S. Bolton, A. D. Bonanno, J. M. Booth, P. S. Barnhart, Wm. Bowler, J. G. Bullard, H. E. Brakewood, J. F. Carey, R. L. Chalfonte, Roy Charron, Wm. Clarenboch, H. C. Cookingham, E. T. Costello, Elmer Craven, C. C. Decker, A. W. Dempsey, R. H. Doughty, Geo. Eaton, Carl Erickson, W. L. Foote, C. W. Fletcher, A. H. Gilman, H. L. Glass, P. P. Gooding, H. M. Grasselt, D. H. Gutermann, Ralph Hayden, E. E. Hazen, A. L. Hobday, Alden Holt, P. W. Horeyseck, W. Hotin, H. C. Johnson, H. D. Johnston, W. F. Kallock, Dr. Werner Kaufmann, O. C. Kees, Helen Kiely, R. E. Kilty, A. D. King, A. P. Knaus, B. Leavitt, H. M. Lederken, R. A. Lemieux, Mr. & Mrs. Lester, R. Mannheim, G. Marland, Walter Maroney, A. McDonald, J. McGarry, H. L. Mellen, James Merrill, O. W. Messner, Robert Metcalf, Clark Miller, R. H. Mosher, P. H. Mueller, Ernest O. Nash, H. Naughton, P. R. Nelson, L. W. Nyborn, J. J. O'Brien, R. W. Pattison, H. J. Perry, H. B. Peterson, Robert Peterson, John P. Phelps, R. J. Proctor, H. G. Rappolt, J. G. Rearick, E. O. Reed, G. C. Schmid, Fred Schneider, Wm. Schramm, G. B. Shattuck, L. W. Shattuck, Paul Shirley, N. G. Sixt, C. P. Slocum, H. P. Smith, G. Soule, W. P. Stillman, E. W. Strecker, Geo. W. Sullivan, James Sullivan, Alver Svens, Douglas Swan, George A. Thompson, L. B. Tucker, W. E. Wentworth, Charles Woodcock, Wm. Woosman, Arthur Worthington, C. J. Yarber.

# Washing of Deinked Stock*

## Results of Sodium Hexametaphosphate Treatment

By H. P. Bailey[1] and A. H. Nadelman[2]


### Abstract

*The continuity of production of washed deinked book and magazine stock is impaired in many cases by formation of scale which clogs the wires of cylinder washers and fills up drain pipes and pumps. Removal of scale by means of hydrochloric acid or other methods is time consuming, cumbersome, and expensive. Threshold treatment of the shower water with 2 to 3 p.p.m. sodium hexametaphosphate has resulted in stoppage of scale deposition, removal of old scale, improved continuity of production and decreased cost of maintenance of the washer system. These findings are based on several months' operating experience.*


The utilization of production facilities with a minimum of interruption has always been highly desirable. The purpose of this paper is to show how the continuity of production of washed deinked stock can be improved by treating high calcium shower water with sodium hexametaphosphate, the dosage being in the range of 2 to 3 p.p.m. Treatment at such a low concentration is known under the name of "Threshold Treatment."

A considerable part of the literature on the application of sodium hexametaphosphate in water treatment has been surveyed by Hatch, and Rice *(1)*. Gibson *(2)* discussed several applications of sodium hexametaphosphate in the paper industry. Lang and Laurin *(3)* reported increased efficiency in washing of chemical pulps, if 15 to 35 p.p.m. of sodium hexametaphosphate are introduced.

While many publications discuss the application of sodium hexametaphosphate, only a few investigators dealt with the mechanism of the threshold treatment. Reitemeier and Buehrer *(4, 5)* studied the inhibiting action of minute amounts of sodium hexametaphosphate on the precipitation of calcium carbonate from ammoniacal solution. They assume that sodium hexametaphosphate in concentrations of 1 to 2 p.p.m. is adsorbed upon the surface of calcium carbonate crystals, which show retarded growth, are relatively large and do not show the usual crystalline structure of calcite. Hatch and Rice *(1)* claim that sodium hexametaphosphate is adsorbed upon metal surfaces, forms protective films, and so inhibits the deposition of scale onto the surface of the metal.

It was the object of this investigation to improve the continuity of production of washed deinked book and magazine stock. The continuity of operation of the washers for unbleached deinked stock was impaired by copious formation of scale. Fig. 1 shows the layout of the washer system.

The unbleached deinked stock is washed on five cylinder unit washers.

The effluent of the second to fifth cylinders is reused in the headbox preceding the riffler. The washed stock is bleached by means of calcium hypochlorite, screened, and rewashed on two cylinder rewashers. The shower water of the rewashers comes from the mill's filtration plant. The total system consists of several five cylinder unit washers for unbleached stock and two cylinder unit rewashers for bleached stock. The effluent of the rewashers is discharged into a joint header preceding a pump which serves the showers of the washers for unbleached stock as well as the screen showers.

### Sources of Scale Forming Material

Inspection of the layout of the washer system reveals that there are three sources of scale forming material, namely: blow chest liquor, bleach chest liquor, and fresh water.

Blow chest liquor contains a considerable quantity of sodium hydroxide and sodium carbonate; this is due to the fact that the deinking process requires alkali in excess of the quantity which is consumed by the waste paper stock. The excess seems to be necessary since the deinking process becomes incomplete and slow below a certain minimum concentration of alkali.

Bleach chest liquor contains large quantities of calcium chloride in addition to other water soluble products formed during the bleaching of book and magazine stock with calcium hypochlorite. The bleach chest liquor may contain more than 1000 p.p.m. permanent hardness expressed in terms of calcium carbonate.

Repeated analyses of representative samples of fresh water show that the total hardness varies within the range of 100 to 120 p.p.m. Table I gives detailed information as to some of the constituents of the fresh water.

TABLE I.—ANALYSES OF FRESH WATER SUPPLY

| | Sample 1 p.p.m. | Sample 2 p.p.m. | Sample 3 p.p.m. | Sample 4 p.p.m. |
|---|---|---|---|---|
| Total soap hardness | 110.0 | 119.0 | 111.0 | 102.0 |
| Temporary soap hardness | 35.5 | .... | .... | .... |
| Permanent soap hardness | 74.5 | .... | .... | .... |
| Calcium | .... | .... | 37.5 | 38.3 |
| Magnesium | .... | .... | 5.4 | 3.6 |
| Total hardness by calculation | .... | .... | 115.8 | 110.4 |

The shower water of the washers for unbleached deinked stock represents a mixture of bleach chest liquor and fresh water. The total hardness of the shower water amounts to about 350 p.p.m.

It is evident that the presence of an excess of caustic and carbonate alkalinity results in precipitation of water soluble calcium and magnesium salts. Calculations based on analyses show that between 6000 and 10,000 pounds of soluble calcium and magnesium salts enter the washer system during a day's production run.

Experience has shown that a part of the precipitated carbonates forms hard deposits of scale which clogs the wires of the cylinder washers, covers the doctor boards as well as doctor blades, fills up drain pipes, and clogs pumps. Interruption of production is unavoidable as long as the scale has to be removed by means of hydrochloric acid or other methods. While the scale is dissolved by the acid, its use is very cumbersome due to unpleasant acid fumes. Furthermore, the use of hydrochloric acid requires utmost care and safety measures to prevent serious burns. Finally,

* Presented at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 25-28, 1946.

[1] Member TAPPI; Manager, International Paper Co., Niagara Falls, N. Y.

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excessive use of acid corrodes the wires, spiders, and other metal parts of the washers, and destroys the collar bands, which are so important to hold fiber losses at a minimum.

### Laboratory Experiments with Sodium Hexametaphosphate

Desiring to prevent or inhibit formation of scale on the washers, several chemicals were tried in the laboratory in conjunction with samples of clarified alkaline blow chest liquor and shower water containing 350 p.p.m. hardness.

Experiments showed that the visible precipitation of insoluble carbonates from blow chest liquor by means of high calcium shower water was delayed by 5 p.p.m. of sodium hexametaphosphate for more than 30 minutes. This was true even after inoculation of the mixture with a small quantity of calcium carbonate crystals. After 30 minutes a precipitate could be observed which was fundamentally different from the one formed in mixtures without sodium hexametaphosphate. The precipitate in the mixture treated with sodium hexametaphosphate formed fluffy, voluminous flocs which did not cling to the wall of the container, settled rapidly, and left the supernatant liquid clear and transparent. Without the sodium hexametaphosphate treatment, a fine precipitate was obtained relatively quickly. Due to slow and incomplete sedimentation, the liquid remained turbid even after 16 hours. The sediment clung to the walls of the glass container.

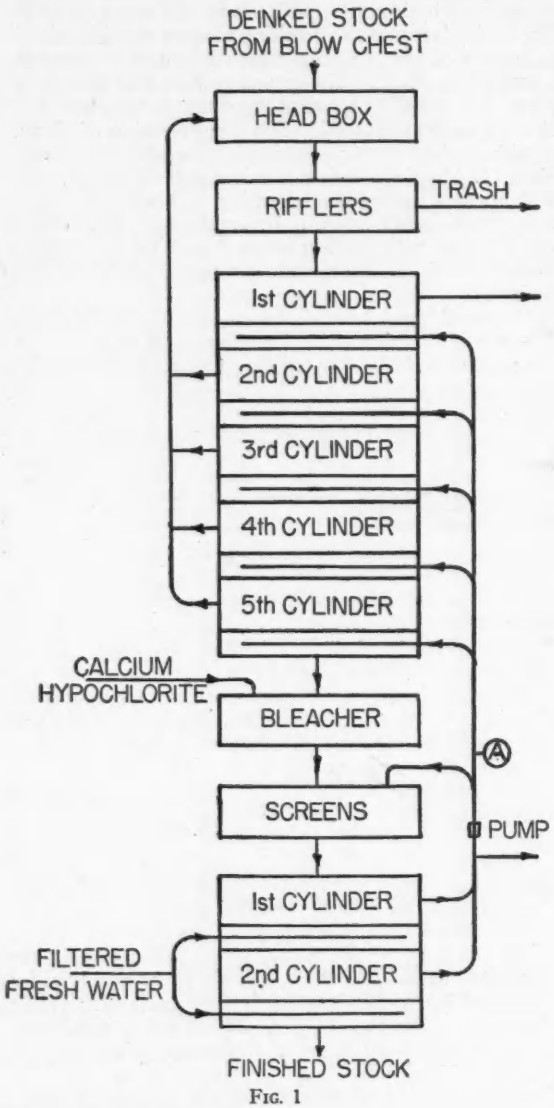


FIG. 1

### Trial Run

Encouraged by the results of the laboratory experiments, it was decided to make a trial run in the mill over a period of 1 week. A slightly alkaline solution of sodium hexametaphosphate was fed continuously by gravity into the effluent of the rewashers. The rate of flow was adjusted to yield 4 p.p.m. of sodium hexametaphosphate in the shower water. Determinations of sodium hexametaphosphate were run colorimetrically. A modification of the Truog and Meyer *(6)* method was employed.

The sodium hexametaphosphate treatment resulted in a remarkable stoppage of scale deposition and, consequently, in a decrease of shut-downs of the washers. Table II shows the conditions before, during, and after the treatment with sodium hexametaphosphate.

TABLE II.—RESULTS OF THRESHOLD TREATMENT WITH SODIUM HEXAMETAPHOSPHATE

| | Six Days' Period Before Treatment | Six Days' Period During Treatment | Six Days' Period After Treatment |
|---|---|---|---|
| Chemical added to shower water. | None | 4 p.p.m. Sodium hexametaphosphate | None |
| Average frequency of souring with hydrochloric acid per cylinder and week..... | 11.4 | 0.8 | 8.7 |
| Average frequency of souring with hydrochloric acid per cylinder at start of following week... | 0.9 | 0 | 0.9 |

In addition to the prevention of scale formation, the sodium hexametaphosphate removed old scale deposits. The surface of the scale on the doctor blades and boards of the washers became porous and brittle, a gradual reduction of the thickness of the layer of scale took place.

### Continuous Operation

After the promising trial run, it was decided to install a permanent system for sodium hexametaphosphate treatment. A stainless steel constant rate feeding pump with adjustable stroke injects the solution of the chemical into the shower water at a point marked "A" in Fig. 1. The rate of feeding has been adjusted so as to yield 2 to 3 p.p.m. of sodium hexametaphosphate in the water.

Several months' experience has taught that it is possible to inhibit or prevent formation of scale on the washers. Interruptions of production due to scale deposits are practically eliminated. Scale on doctor blades, doctor boards, and other places has vanished.

The cost of sodium hexametaphosphate plus royalty is less than the amount spent on hydrochloric acid before the water treatment was started. The cost of maintenance of the washers has decreased to a considerable extent. The life expectancy of collar bands, spiders, and cylinder wires is longer than ever, due to the fact that acid is practically eliminated.

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# New York Paper and Pulp Market Review

## Paper Output Reaches Peak At 104.1 Percent of Capacity — Wood Pulp Supply Tight With Maximum Swedish Imports Dependent Upon Higher Prices — Mill Buying of Paper Stock Is Heavy.

Office of the PAPER TRADE JOURNAL,
Wednesday, March 27, 1946.

Demand for all grades of paper and paperboard is currently at a record level. Production is also at a peak at 104.1% of capacity and the outlook for the industry is bright. The prospect appears excellent at this date that production for 1946 will approximate 18,200,000 tons. The well known ability of the industry to consistently maintain a high production ratio is augumented with some 26 new machines and substantial modernizations, improvements and repairs have provided increased facilities this year. In the second half of 1946 new pulping facilities, especially in Canada, will increase the output.

Current demand is particularly heavy for all essential types of paper and paperboard. The most acute need at this date appears in paper and board required in food packaging.

Newsprint continues in short supply. Higher prices for print paper, of from $5 to $6 a ton, are considered a possibility in the second half of this year. According to the Department of Commerce, the ratio of net profit before taxes to net worth of 114 paper companies for 1945, was 19.3%, compared with 14.7% for 1944, and with an average of 5.6% for 1936-1939.

The index of wholesale paper and pulp prices in 1945 was 101.8, compared with 89.3 for 1940, with 80.3 for 1935, with 88.7 for 1930 and with 100.0 for 1926.

The index of general business activity for the week ended March 16 rose to 131.1, from 127.9 in the previous week, compared with 157.6 for the corresponding week in 1945. The index of paperboard production was 166.1, compared with 157.6 in the previous week, and with 152.6 for the corresponding week in 1945.

Paper production for the week ended March 16 was estimated at 104.1, compared with 89.4% for 1945, with 92.2% for 1944, with 88.0% for 1943, and with 103.6% for the corresponding week in 1942.

Paperboard production for the week ended March 16 was 93.0%, compared with 95.0% for 1945, with 95.0% for 1944, with 92.0% for 1943, and with 101.0 for the corresponding week in 1942.

### Wood Pulp

Wood pulp supplies for this year are uncertain at this date, particularly for non-integrated mills. Some are reported with good inventories while others have only from one to two month's supply. Consumption in December, 1945 declined 7% below November, while November was 5% under October. Inventories increased 12% in December and 27% over October, 1945, rising from 436,000 tons to 533,000 tons. The greatest increase was in sulphate, up 32% in the unbleached grades up 48%. Sulphite rose 28%, with unbleached up 34%, and groundwood increased 18%.

Imports of Swedish pulp this year are largely dependent upon a satisfactory increase in OPA ceiling prices. It is understood that a price increase of $9 a ton will be the minimum required to insure maximum shipments of wood pulp from Sweden this year.

### Rags

Mill demand for new cotton cuttings is heavy this week, with some mills reporting inability to purchase their minimum requirements. The market position is strong, with prices firm at ceiling levels.

Less demand is reported at this date from roofing felt mills. Some quarters report that the rather limited tonnages of imported rags has created the expectation of lower old rag prices. However, the record heavy demand for roofing and floor coverings markes it unlikely that prices will decline materially. A huge unsatisfied consumer demand for the products of roofing mills seems likely to maintain a strong market for most of this year. Prices are firm at ceiling levels.

### Old Bagging

Trading in scrap bagging this week is reported as moderate, but the volume of trading is under last week. A more cautious attitude on the part of buyers is also reported this week. Prices are firm and continue unchanged.

### Old Waste Paper

Paper and board mills are widely reported as steady buyers of all grades of waste paper. The record demand for increased tonnages of paper and paperboard for food packaging, as well as other uses, continues to maintain a strong market in fibrous papermaking materials. Prices are strong at ceiling levels.

## Goodrich Names Franklin as Buyer

AKRON, Ohio, February 4, 1946—Robert D. Franklin has been appointed manager of the textiles, cotton, advertising and paper products department of the B. F. Goodrich Purchasing division. Franklin succeeds M. N. Twyman who has established his own business in Wilmington, Ohio. A graduate of the Case School of Applied Science, Cleveland, Franklin joined the company in 1927 as a time study engineer in the Industrial Products division. He later was assigned to special industrial engineering problems, was manager of the specifications department and package engineer in the division.

Transferred to the purchasing division in 1931, Franklin was buyer of paper and paper products, office equipment and supplies for three years, buyer of advertising materials from 1934 to 1939 and since 1939 had been buyer of textiles.

## Defibrator Elects Johaneson, Lowgren

Directors of American Defibrator, Inc., 405 Lexington Avenue, New York, N. Y., handling sales of the Asplund Defibrator exclusively in the U. S. and Canada have elected Nils R. Johaneson a director and Chairman of the Board. Mr. Johaneson is president of Cellulose Sales Corp., also president of the Swedish Chamber of Commerce and president of Johaneson, Wales & Sparre. At the same meeting, Mr. Uno Lowgren who has been a vice president was elected president of the company.

ROGERS "NT" KNIFE GRINDER

*Has* EXTRA-WIDE "V" WAYS *for* SUPERIOR PRECISION GRINDING

Dependable knife-grinding results . . . extra-keen cutting edges . . . are assured by this exclusive Rogers advantage. Rugged, durable performance, under varying limits of pressure and feed,—all easily controlled by any unskilled operator, promise knife-grinding satisfaction in your own plant.

Send for Circular NT

**SAMUEL C. ROGERS & COMPANY**
202 Dutton Ave., Buffalo 11, N. Y.

5 SIZES
48" 72"
90" 110" 134"

PRECISION QUALITY **ROGERS KNIFE GRINDERS** SINCE 1887

**Price & Pierce Ltd.**

**WOOD PULP & PAPER AGENTS**

for domestic and export

60 East 42nd Street, New York 17, N.Y.

**West Virginia Pulp and Paper Company**

230 Park Ave. New York
35 East Wacker Drive Chicago
Public Ledger Building Philadelphia, Pa.
503 Market St. San Francisco, Cal.

Manufacturers of

ENGLISH FINISH BOOK
SUPERCALENDERED BOOK
and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers, Machine Coated

HIGH GRADE COATED BOOK

• • • •

KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

MILLS:
Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

# MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, March 27, 1946.

BLANC FIXE—The market for blanc fixe is reported steady for the week. Current demand continues moderate. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is currently quoted at $60 per ton.

BLEACHING POWDER — Demand reported good this week. Bleaching powder is currently quoted at from $2.50 to $3.10 per 100 pounds. All prices in car lots, in drums, f.o.b. works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound, less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point. Imported, 24 cents per pound.

CAUSTIC SODA—Supply situation continues short. No material improvement reported this week. January output lower at 85,846 tons. Solid caustic soda is currently quoted at $2.30 per 100 pounds. The flake and ground are currently quoted at $2.70 per 100 pounds. All prices are in car lots, in drums, f.o.b. works.

CHINA CLAY—Demand for most grades of china clay is reported good this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mines. Imported china clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Demand heavy. Production for January lower at 89,637 tons. Shortage of tank cars and cylinders slows delivery. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b. works.

ROSIN—No offering or sales. OPA prices: "G" gum rosin at $6.74 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $6.70 per 100 pounds in barrels, New York. Average price of 70% gum rosin size is currently offered at $6.95 per 100 pounds, f.o.b. works.

SALT CAKE—Demand reported good. Quotations on salt cake continue to remain unchanged. Domestic salt cake is currently quoted at $15 per ton; chrome cake at $16 per ton.

SODA ASH—Market demand for soda ash continue heavy. Bulk shipments fairly prompt. Bulk and bagged lot shipments steady. January output lower. Prices continue unchanged. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Receipts sharply lower as planting season nears. Receipts of 777,000 bushels 50% under last year. Corn prices are steady. Starch quotations continue unchanged. Pearl is currently quoted at $3.72 per 100 pounds. The powdered grade is currently quoted at $3.83 per 100 pounds. All prices f.o.b. Chicago.

SULPHATE OF ALUMINA — Supply situation shows improvement. Quotations are unchanged. Prices on the commercial grades are quoted at from $1.15 to $1.25 per 100 pounds. The iron free is currently quoted at $1.75 per 100 pounds. All prices in car lots, in bags, f.o.b. works.

SULPHUR—Demand is reported active for sulphur. Quotations on all grades continue unchanged. Annual contracts are currently quoted at $16 per long ton, f.o.b. mines. The current contract prices at Gulf Ports remains unchanged at $17.50 per long ton.

TALC—The market for domestic talc is reported fair this week. Quotations unchanged. Domestic grades are quoted at from $16 to $21 per ton, at mines. Canadian $24 per ton. All prices in car lots.

# MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

## Paper

(Delivered New York)

| | | | |
|---|---|---|---|
| **Standard News, per ton—** | | | |
| Roll, contract | *$67.00 | @ | — |
| Sheets | 75.00 | @ | — |
| * OPA Maximum Price. | | | |
| **Kraft—per cwt.—Carload Quantities Zone A, Delivered** | | | |
| Superstandard Wrapping | *$5.25 | @ | — |
| No. 1 Wrapping | *5.00 | " | — |
| Standard Wrapping | *4.75 | " | — |
| Standard Bag | *4.375 | " | — |
| * OPA Manufacturers' Prices. | | | |
| **Tissues—Per Ream—Carlots** | | | |
| White No. 1 | 1.12½ | " | — |
| White No. 1 M. G. | 1.10 | " | — |
| White No. 1½ | 1.00 | " | — |
| White No. 2 | .90 | " | — |
| Anti-Tarnish M.F. | 1.20 | " | — |
| Colored | — | " | — |
| Kraft | .95 | " | — |
| Manila | .90 | " | — |
| **Toilet—1 M. Sheets—Per Case** | | | |
| Unbleached | 4.25 | " | — |
| Bleached | 5.70 | " | — |
| Unbl. Toilet, 1 M. | 4.16 | " | — |
| Bleached Toilet | 5.70 | " | — |
| **Paper Towels, Per Case—** | | | |
| Unbleached, Jr. | 2.20 | " | — |
| Bleached, Jr. | 3.20 | " | — |
| **Manila—per cwt.—C. l. f. a.** | | | |
| No. 1 Jute | 11.25 | @ | — |
| No. 1 Manila Wrapping, 35 lb. | 6.00 | " | 6.25 |
| No. 2 Manila Wrapping, 35 lb. | 5.75 | " | 6.00 |
| **Boards, per ton—** | | | |
| News | *54.00 | @ | — |
| Chip | *54.00 | @ | — |
| Sgl. Mla. Lt. Chip | *65.00 | @ | — |
| White Pat. Coated | *79.00 | @ | — |
| Kraft Liners 50 lb. | *63.00 | " | — |
| Binders Boards | 84.00 | " | 116.00 |

* OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

**The following are representative of distributors' resale prices:**

**Rag Content Bonds and Ledgers—White, Assorted Items**
**Delivered in Zone 1:**

| | Bonds | Ledgers |
|---|---|---|
| 100% Rag Ext. No. 1 | $39.10@$46.00 | $40.25@$47.25 |
| 100% Rag | 32.20 " 37.75 | 33.35 " 39.25 |
| 85% Rag | .... " .... | 29.90 " 35.00 |
| 75% Rag | 23.00 " 27.00 | 24.15 " 28.25 |
| 65% Rag | .... " .... | 22.80 " 27.75 |
| 50% Rag | 18.70 " 22.75 | 19.90 " 24.25 |
| 25% Rag | 16.40 " 20.00 | 17.55 " 21.50 |

Colors at $1.00 cwt. extra.

**Sulphite Bonds and Ledgers—White, Assorted Items**
**Delivered in Zone 1:**

| | Bonds | Ledgers |
|---|---|---|
| No. 1 | $10.55@$12.75 | $11.70@$14.25 |
| No. 2 | 9.65 " 11.75 | 10.80 " 13.25 |
| No. 3 | 9.20 " 11.25 | 10.35 " 12.50 |
| No. 4 | 8.90 " 10.75 | 10.05 " 12.25 |

Colors $1.00 cwt. extra.

**Free Sheet Book Papers—White, Cased Paper Delivered in Zone 1:**

| | |
|---|---|
| No. 1 Glossy Coated | $13.65@$15.50 |
| No. 2 Glossy Coated | 12.40 " 14.00 |
| No. 3 Glossy Coated | 11.60 " 13.25 |
| No. 4 Glossy Coated | 11.15 " 12.75 |
| No. 1 Antique (watermarked) | 10.25 " 11.75 |
| No. 2 Offset | 9.60 " 11.00 |
| A Grade E. F. | 9.35 " 10.75 |
| A Grade S. & S. C. | 9.60 " 11.00 |
| B Grade E. F. | 8.85 " 10.25 |
| B Grade S. C. | 9.10 " 10.50 |
| C Grade E. F. | 8.55 " 9.75 |
| C Grade S. C. | 8.80 " 10.00 |
| D Grade E. F. | 8.25 " 9.50 |
| D Grade S. & S. C. | 8.50 " 9.75 |

Ivory & India at $.50 cwt. extra.

## Wood Pulp

**OPA Maximum Prices and Canadian Manufacturers' Prices, Less Freight. Not Exceeding OPA Allowances.**

| | |
|---|---|
| Bl. Softwood Sulphite | $86.00 |
| Unbl. Softwood Sulphite | 74.00 |
| Bl. Hardwood Sulphite | 83.50 |
| Unbl. Hardwood Sulphite | 71.50 |
| Bl. Mitscherlich | 81.00 |
| Unbl. Mitscherlich | 72.00 @ 82.00 |
| N. Bleached Sulphate | 86.00 |
| S. Bleached Sulphate | 79.00 |
| N. Semi-Bleached Sulphate | 82.00 |
| S. Semi-Bleached Sulphate | 75.00 |
| N. Unbl. Sulphate | 73.00 |
| S. Unbl. Sulphate | 63.50 |
| Bl. Soda | 76.00 |
| Unbl. Soda | 72.00 |
| Groundwood | 50.00 |

**Transportation Allowances**

**Applying to Producers of Wet Wood Pulp.**

| | Below 50% Air Dry Weight |
|---|---|
| Northeast | $13.50 |
| Lake Central | 13.50 |
| Southern | 16.00 |
| West Coast (in area) | 10.50 |
| West Coast (out area) | 16.50 |

| | 50%-80% Air Dry Weight |
|---|---|
| Northeast | $11.50 |
| Lake Central | 11.50 |
| Southern | 14.00 |
| West Coast (in area) | 9.50 |
| West Coast (out area) | 15.50 |

**Applying to Producers of Dry Wood Pulp.**

| | Above 80% Air Dry Weight |
|---|---|
| Northeast | $8.50 |
| Lake Central | 8.50 |
| Southern | 11.00 |
| West Coast (in area) | 7.50 |
| West Coast (out area) | 13.50 |

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

## Domestic Rags

**New Rags**
**(Prices to Mill f. o. b. N. Y.)**

| | | | |
|---|---|---|---|
| **Shirt Cuttings—** | | | |
| New White, No. 1 | 6.50 | @ | 7.25* |
| Silesias No. 1 | — | " | 5.75* |
| New Unbleached | 6.75 | " | 7.50* |
| Blue Overall | — | " | 5.50* |
| Fancy | — | " | 3.50* |
| Washables | — | " | 3.00* |
| Bleached Khaki Cuttings | — | " | 4.25* |
| Unbleached Khaki Cuttings | — | " | 3.50* |

* OPA Maximum Prices.

# SLIME

need not be a production problem in your mill.

There's an easy to use, speedy means of getting rid of deposits and of minimizing their formation.

**MAGNUS SLIME REMOVER**

readily penetrates, loosens and removes slime accumulations. It kills the fungi and bacteria that are responsible for slime growth, and thus slows down the rate of new slime formation. Used at the rate of 1 lb. per 100 gallons of water in the beater, and circulated through the wet end of the system, Magnus Slime Remover will go a long way toward solving your slime troubles.

*May we send you a liberal quantity for thorough trial?*

MAGNUS

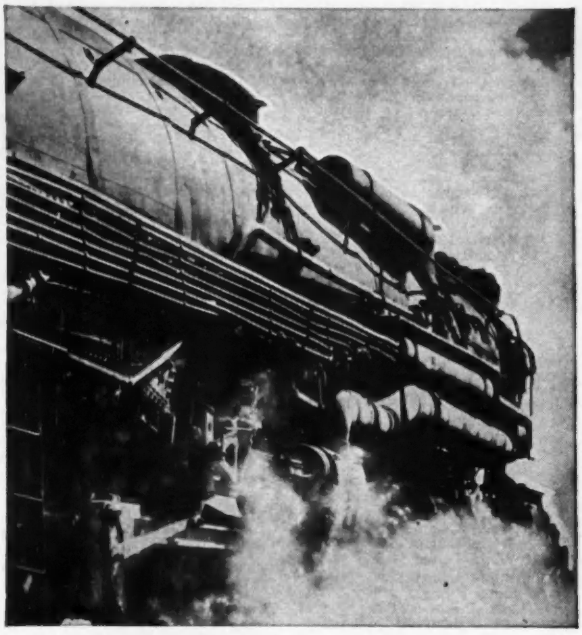
MAGNUS CHEMICAL COMPANY
74 SOUTH AVENUE, GARWOOD, N. J.
Paper Mill Cleaners

# SCREENS for PAPER and PULP MILLS

PERFORMANCE of your Centrifugals, Shakers and Drainers definitely improved by the use of precision screens built to your specifications. Let us "sit in" on your screening problems.

The Harrington & King PERFORATING Co.

5652 Fillmore St., Chicago 44, Ill.—114 Liberty St., New York 6, N. Y.



# YOU CAN'T GET POWER FROM LOST STEAM!

Steam—or any gas or liquid—leaking past a faulty gland or stuffing box . . . is lost for processing or as a source of power. The *wasted time* and *lost production* resulting from frequent replacement of improper or poor quality packing is a loss of much greater importance! That's why the use of "any packing that's handy" should be guarded against.

**USE THE *RIGHT* PACKING!**

PALMETTO makes the *right* packing for every one of your applications . . . the right quality for most economical maintenance . . . the right design for most effective sealing—with least wear to rods, shafts and stems.

*Write today for bulletins which show what packings to use where.*

**GREENE, TWEED & CO.**
Bronx Blvd. at 238th St., New York 66, N. Y.
Plants at New York, N. Y. and North Wales, Pa. GT-1528

**PALMETTO** PALMETTO for steam, water, air. PELRO for oils. CUTNO for alkalis. SUPER-CUTNO blue asbestos, for acids. KLERO for foods.

*Self-Lubricating* **PACKINGS**

### Old Rags

| | | | |
|---|---|---|---|
| White, No. 1— | | | |
| Repacked | *3.80 | @ | — |
| Miscellaneous | *3.20 | " | — |
| White, No. 2— | | | |
| Repacked | *2.90 | " | — |
| Miscellaneous | *2.65 | " | — |
| Thirds and Blues— | | | |
| Repacked | *2.20 | " | — |
| Miscellaneous | *1.30 | " | — |
| Roofing Rags— | | | |
| No. 1 | *1.55 | " | — |
| No. 2 | *1.45 | " | — |
| No. 3 (bagging) | *1.35 | " | — |
| No. 4 | *1.35 | " | — |
| No. 5A | *1.35 | " | — |
| Old Manila Rope | 5.75 | " | — |

* OPA Maximum Prices.

### Foreign Rags

Pre-War Quotations

All Prices Nominal

New Rags

| | | | |
|---|---|---|---|
| New Dark Cuttings | 2.25 | @ | 2.40 |
| New Mixed Cuttings | 2.00 | " | 2.20 |
| New Light Silesias | 5.50 | " | 5.75 |
| Light Flannelettes | 5.50 | " | 5.75 |
| New White Cuttings | 7.00 | " | 7.50 |
| New Light Oxfords | 4.00 | " | 4.50 |
| New Light Prints | 3.00 | " | 3.25 |

Old Rags

| | | | |
|---|---|---|---|
| No. 1 White Linens | 7.50 | " | 8.50 |
| No. 2 White Linens | 6.50 | " | 7.50 |
| No. 3 White Linens | 4.50 | " | — |
| No. 4 White Linens | 2.25 | " | 3.25 |
| No. 1 White Cotton | 4.25 | " | 4.75 |
| No. 2 White Cotton | 3.25 | " | 3.75 |
| No. 3 White Cotton | 2.50 | " | 3.00 |
| No. 4 White Cotton | 1.90 | " | 2.20 |
| Extra Light Prints | 2.00 | " | 2.40 |
| Ord. Light Prints | 1.75 | " | 2.15 |
| Med. Light Prints | 1.55 | " | 1.95 |
| Dutch Blue Cottons | 2.25 | " | 2.50 |
| French Blue Linens | 3.00 | " | — |
| Checks and Blues | 2.00 | " | — |
| Linsey Garments | 1.90 | " | 2.00 |
| Dark Cottons | 1.50 | " | 1.60 |
| Old Shopperies | 1.30 | " | 1.45 |
| New Shopperies | 1.45 | " | 1.50 |
| French Blues | 2.25 | " | 2.50 |

### BAGGING

(Prices to Mill, f. o. b. N. Y.)

| | | | |
|---|---|---|---|
| Gunny No. 1— | | | |
| Foreign | Nominal | | |
| Domestic | 3.25 | @ | 3.30 |
| Wool Tares, light | 3.25 | " | 3.50 |
| Wool Tares, heavy | 3.50 | " | 3.75 |
| Bright Bagging | 3.25 | " | 3.50 |
| Manila Rope— | | | |
| Foreign | — | " | — |
| Domestic | *5.75 | " | — |
| Jute Threads | 5.50 | " | — |
| No. 1 Sisal Strings | *4.00 | " | — |
| Mixed Strings | 1.50 | " | — |

* OPA Maximum Prices.

### Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

| | | | |
|---|---|---|---|
| No. 1 Hard White Envelope Cuts, one cut | 3.37½ | @ | — |
| No. 1 Hard White Envelope Cuts | 3.12½ | " | — |
| No. 1 Hard White Shavings, unruled | 2.87½ | " | — |
| No. 1 Hard White Shavings, ruled | 2.50 | " | — |
| No. 1 Soft White Shavings | 2.50 | " | — |
| Soft White Shavings, Misc. | 2.15 | " | — |
| No. 1 Fly Leaf Shavings | 1.67½ | " | — |
| No. 2 Fly Leaf Shavings | 1.12½ | " | — |
| No. 1 Groundwood Fly Leaf Shavings | 1.25 | " | — |
| No. 2 Mixed Groundwood Fly Leaf Shavings | .90 | " | — |
| Mixed Colored Shavings | .75 | " | — |
| Mixed Groundwood Colored Shavings | .90 | " | — |
| Overissue Magazines | 1.67½ | " | — |
| No. 1 Heavy Books & Magazines | 1.92½ | " | — |
| Mixed Books | 1.10 | " | — |
| No. 1 White Ledger | 2.30 | " | — |
| No. 2 Mixed Ledger, colored | 2.00 | " | — |
| New Manila Envelope Cuttings, one cut | 2.87½ | " | — |
| New Manila Envelope Cuttings | 2.65 | " | — |
| Extra Manilas | 1.95 | " | — |
| Mixed Kraft, Env. & Bag Cuttings | 2.75 | " | — |
| Kraft Envelope Cuttings | 3.25 | " | — |
| Triple Sorted, No. 1 Brown Soft Kraft | 2.50 | " | — |
| New 100% Kraft Corrugated Cuttings | 2.25 | " | — |
| No. 1 Assorted Old Kraft | 1.75 | " | — |
| New Jute Corrugated Cuttings | .90 | " | — |
| Old 100% Kraft Corrugated Containers | 1.75 | " | — |
| Old Corrugated Containers | 1.40 | " | — |
| Box Board Cuttings | .72½ | " | — |
| White Blank News | 1.65 | " | — |
| Overissue News | 1.10 | " | — |
| No. 1 News | 1.00 | " | — |
| No. 1 Mixed Paper | .95 | " | — |
| Old Corrugated Containers | .82½ | " | — |
| Mill Wrappers | 1.10 | " | — |

### Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

| | | | |
|---|---|---|---|
| Coarse Polished— | | | |
| India | .24 | @ | — |
| White Hemp | .21 | " | — |
| Fine Polished— | | | |
| Fine India | .26 | " | — |
| Unpolished— | | | |
| Box | .17¼ | " | — |
| Paper Makers | .17 | " | — |
| Tube Rope | .19 | " | — |
| Wall Paper | .20½ | " | — |
| Wrapping | .23 | " | — |
| Soft Fiber Rope | .19 | " | — |
| Cotton | .25 | " | — |

(Hard Fiber)

| | | | |
|---|---|---|---|
| Medium Java | .18 | " | — |
| Mex. Sisal | .16 | " | — |
| Manila | — | " | — |

## PHILADELPHIA

### Domestic Rags (New)

(Price to Mill)

| | |
|---|---|
| Shirt Cuttings— | |
| New White No. 1 | .07¾ |
| New White No. 2 | .05¾ |
| Light Silesias | .05¾ |
| Black Silesias, soft | .03¾ |
| New Unbleached | .07½ |
| Washable Prints | .04¾ |
| Washable No. 1 | .03 |
| Blue Overall | .05½ |
| Cottons—According to grades— | |
| Washable Shredding | .01¾ |
| Fancy Percales | .04¾ |
| New Black Soft | .03¼ |
| Khaki Cuttings— | |
| Unbleachable Cotton Cuttings | .03½ |
| Bleachable Cotton Cuttings | .04½ |
| Men's Corduroy | .03½ |
| Ladies' Corduroy | .03 |
| Cottonades | .03¼ |

### Domestic Rags (Old)

| | | | |
|---|---|---|---|
| White No. 1—Repacked | 3.80 | @ | — |
| Miscellaneous No. 1 | 3.20 | " | — |
| Miscellaneous No. 2 | 2.65 | " | — |
| White No. 2—Repacked | 2.90 | " | — |
| Thirds and Blues— | | | |
| Miscellaneous | 1.80 | " | — |
| Repacked | 2.20 | " | — |
| Black Stockings— | | | |
| (Export) | Nominal | | |
| Roofing Stock— | | | |
| Foreign No. 1 | Nominal | | |
| Domestic No. 1 | 1.55 | " | — |
| Domestic No. 2 | 1.45 | " | — |
| Roofing Bagging | 1.35 | " | — |
| Old Manila Rope | 5.75 | " | — |

### Bagging

(F. o. b. Phila.)

| | | | |
|---|---|---|---|
| Gunny No. 1— | | | |
| Foreign | Nominal | | |
| Domestic | 3.00 | @ | 3.50 |
| No. 1 Clean Bright—Sisal Strings | .04 | " | — |
| No. 2 Clean Bright—Sisal Strings | .03 | " | — |
| Sisal Jute | .02½ | " | .02¾ |
| Scrap— | | | |
| No. 1 | 3.25 | " | 3.50 |
| No. 2 | 1.75 | " | 1.80 |
| Wool Tares, heavy | 4.00 | " | 4.25 |
| No. 1 New Light Burlap | 3.00 | " | 4.00 |
| New Burlap Cuttings | 3.75 | " | 4.00 |

### Old Papers

(F. o. b. Phila.)

OPA Maximum Prices, Baled

| | | | |
|---|---|---|---|
| No. 1 Hard White Envelope Cuts, one cut | 3.37½ | @ | — |
| No. 1 Hard White Shavings, unruled | 2.87½ | " | — |
| Soft White Shavings, one cut | 2.50 | " | — |
| White Blank News | 1.65 | " | — |
| Soft White Shavings, Misc. | 2.15 | " | — |
| No. 1 Hard White Shavings, ruled | 2.50 | " | — |
| No. 1 Fly Leaf Shavings | 1.67½ | " | — |
| No. 2 Fly Leaf Shavings | 1.12½ | " | — |
| No. 1 Groundwood Fly Leaf Shavings | 1.25 | " | — |
| No. 2 Groundwood Fly Leaf Shavings | .90 | " | — |
| Mixed Colored Shavings | .75 | " | — |
| New Manila Envelope Cuts, one cut | 2.87½ | " | — |
| Hard White Envelope Cuts, one cut | 3.37½ | " | — |
| Triple Sorted No. 1 Brown Soft Kraft | 2.50 | " | — |
| Mixed Kraft Env. & Bag Cuttings | 2.75 | " | — |
| Kraft Envelope Cuttings | 3.25 | " | — |
| No. 1 Heavy Books & Magazines | 1.92½ | " | — |
| New Manila Envelope Cuts, one cut | 2.87½ | " | — |
| New Manila Envelope Cuttings | 2.65 | " | — |
| White and Colored Tabulating Cards | 2.25 | " | — |
| Ground Wood Tabulating Cards | 1.35 | " | — |
| White Blank News | 1.65 | " | — |
| No. 1 Assorted Old Kraft | 1.75 | " | — |
| No. 1 Mixed Paper | .95 | " | — |
| Overissue News | 1.10 | " | — |
| Box Board Cuttings | .72½ | " | — |
| New Corrugated Cuttings, Kraft | 2.25 | " | — |
| Old 100% Kraft Corrugated Containers | 1.75 | " | — |
| Old Corrugated Containers | 1.40 | " | — |
| Jute Corrugated Cuttings | 1.07½ | " | — |

### Bagging

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Gunny Bagging— | | | |
| Foreign | (nominal) | | |
| Domestic | 2.75 | @ | 2.90 |
| Sisal Rope No. 1 | *4.75 | " | — |
| Sisal Rope No. 2 | * — | " | 4.00 |
| Mixed Rope | 1.60 | " | — |
| Transmission Rope— | | | |
| Foreign | (nominal) | | |
| Domestic | 2.75 | " | 3.00 |
| Manila Rope— | | | |
| Foreign | (nominal) | | |
| Domestic | 5.75 | " | — |
| Soft Jute Rope | 4.50 | " | 5.00 |
| Jute Carpet Threads | 3.00 | " | 3.50 |
| Bleachery Burlap | 8.50 | " | 9.00 |
| Scrap Burlap— | | | |
| Foreign | (nominal) | | |
| Domestic | 3.00 | " | 3.25 |
| South America | — | " | 3.25 |

## BOSTON

### Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

| | | | |
|---|---|---|---|
| No. 1 Hard White Shavings, unruled | 2.87½ | @ | — |
| No. 1 Hard White Shavings, ruled | 2.50 | " | — |
| Soft White Shavings, Misc. | 2.15 | " | — |
| No. 1 Fly Leaf Shavings | 1.67½ | " | — |
| No. 2 Fly Leaf Shavings | 1.12½ | " | — |
| No. 1 Groundwood Fly Leaf Shavings | 1.25 | " | — |
| No. 2 Groundwood Fly Leaf Shavings | .90 | " | — |
| Mixed Colored Shavings | .75 | " | — |
| New Manila Envelope Cuts, one cut | 2.87½ | " | — |
| Hard White Envelope Cuts, one cut | 3.37½ | " | — |
| Triple Sorted No. 1 Brown Soft Kraft | 2.50 | " | — |
| Mixed Kraft Env. & Bag Cuttings | 2.75 | " | — |
| Kraft Envelope Cuttings | 3.25 | " | — |
| No. 1 Heavy Books & Magazines | 1.92½ | " | — |
| New Manila Envelope Cuts, one cut | 2.87½ | " | — |
| New Manila Envelope Cuttings | 2.65 | " | — |
| White and Colored Tabulating Cards | 2.25 | " | — |
| Ground Wood Tabulating Cards | 1.35 | " | — |
| White Blank News | 1.65 | " | — |
| No. 1 Assorted Old Kraft | 1.75 | " | — |
| No. 1 Mixed Paper | .95 | " | — |
| Overissue News | 1.10 | " | — |
| Box Board Cuttings | .72½ | " | — |
| New Corrugated Cuttings, Kraft | 2.25 | " | — |
| Old 100% Kraft Corrugated Containers | 1.75 | " | — |
| Old Corrugated Containers | 1.40 | " | — |
| Jute Corrugated Cuttings | 1.07½ | " | — |

### Bagging

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Gunny Bagging— | | | |
| Foreign | (nominal) | | |
| Domestic | 2.75 | @ | 2.90 |
| Sisal Rope No. 1 | *4.75 | " | — |
| Sisal Rope No. 2 | * — | " | 4.00 |
| Mixed Rope | 1.60 | " | — |
| Transmission Rope— | | | |
| Foreign | (nominal) | | |
| Domestic | 2.75 | " | 3.00 |
| Manila Rope— | | | |
| Foreign | (nominal) | | |
| Domestic | 5.75 | " | — |
| Soft Jute Rope | 4.50 | " | 5.00 |
| Jute Carpet Threads | 3.00 | " | 3.50 |
| Bleachery Burlap | 8.50 | " | 9.00 |
| Scrap Burlap— | | | |
| Foreign | (nominal) | | |
| Domestic | 3.00 | " | 3.25 |
| South America | — | " | 3.25 |
| Wool Tares— | | | |
| Foreign | (nominal) | | |
| Domestic | 4.25 | " | — |
| Aust. Wool Pouches | — | " | 3.65 |
| New Zealand Wool Pouches | — | " | 3.50 |
| New Burlap Cuttings | 4.75 | " | 5.00 |
| Heavy Baling Bagging | 4.00 | " | 4.25 |
| Paper Mill Bagging | 2.50 | " | 3.00 |
| No. 2 Roofing Bagging | 1.35 | " | — |

* OPA Maximum Prices.

### Domestic Rags (New)

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New Light Prints | .04½ | @ | .04¾ |
| Fancy Percales | .04¾ | " | .05 |
| New White No. 1 | .06¾ | " | .07 |
| New Light Flannelettes | .05½ | " | .06 |
| Canton Flannels, Bleached | .06 | " | .06¾ |
| Underwear Cutters, Bleached | .06¼ | " | .06¾ |
| Underwear Cutters, Unbleached | .05¾ | " | .06 |
| Silesias No. 1 | .06 | " | .06¾ |
| New Black Silesias | .03 | " | .03¾ |
| Red Cotton Cuttings | .03½ | " | .04 |
| Soft Unbleached | .06½ | " | .06¾ |
| Blue Cheviots | .05½ | " | .06 |
| Fancy | .02¾ | " | — |
| Washable | .02¾ | " | — |
| Khaki Cuttings | .02¾ | " | .03 |
| O. D. Khaki | .03½ | " | .03¾ |
| Corduroy | .03¼ | " | .03½ |
| New Canvas | .06¼ | " | .06½ |
| B. V. D. Cuttings | .06¼ | " | .06½ |

### Domestic Rags (Old)

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| White No. 1— | | | |
| Repacked | 3.80 | @ | —* |
| Miscellaneous | 3.20 | " | —* |
| White No. 2— | | | |
| Miscellaneous | 2.65 | " | —* |
| Twos and Blues, Repacked | 2.20 | " | —* |
| Old Blue Overalls | 2.25 | " | 2.50 |
| Thirds and Blues, | | | |
| Repacked | 2.20 | " | —* |
| Miscellaneous | 1.80 | " | —* |
| Black, Stockings | 3.50 | " | 4.00 |
| Roofing Stock— | | | |
| No. 1 | 1.55 | " | —* |
| No. 2 | 1.45 | " | —* |
| No. 3 | 1.35 | " | —* |
| No. 4 | 1.35 | " | —* |
| No. 5, Quality A | 1.85 | " | —* |
| Quality B | 1.80 | " | —* |
| Quality C | .95 | " | —* |
| Old Manila Rope | 5.75 | " | —* |

* OPA Maximum Prices.

### Foreign Rags

(F. o. b. Boston)

| | |
|---|---|
| Canvas | (nominal) |
| Dark Cottons | (nominal) |
| Dutch Blues | (nominal) |
| New Checks and Blues | (nominal) |
| Old Fustians | (nominal) |
| Old Linsey Garments | (nominal) |
| New Silesias | (nominal) |

## CHICAGO

### Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

| | | | |
|---|---|---|---|
| Shavings— | | | |
| No. 1 Hard White Envelope Cuts, one cut | 3.37½ | @ | — |
| No. 1 Hard White Shavings, unruled | 2.87½ | " | — |
| No. 1 Soft White Shavings | 2.50 | " | — |
| No. 1 White Ledger | 2.30 | " | — |
| No. 1 Heavy Books & Magazines | 1.92½ | " | — |
| White Blank News | 1.65 | " | — |
| Mixed Kraft Env. & Bag Cuttings | 2.75 | " | — |
| No. 1 Assorted Old Kraft | 1.75 | " | — |
| Overissue News | 1.10 | " | — |
| No. 1 News | 1.00 | " | — |
| No. 1 Mixed Paper | .95 | " | — |
| No. 1 Roofing Rags | 1.55 | " | — |
| No. 1 Roofing Bags | 1.45 | " | — |

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### NEW YORK IMPORTS

WEEK ENDING MARCH 23, 1946

SUMMARY

Cigarette Paper .....10 cs.
Newsprint .....5,289 rolls
Decalcomania Paper .....56 cs., 25 drums

CIGARETTE PAPER

American Express Co., *Henry T. Rainey,* Alicante, 10 cs.

NEWSPRINT

New York Journal American, *Markland,* Liverpool, N. S., 1010 rolls.
New York Tribune, Inc., *Markland,* Liverpool, N. S., 1488 rolls.
New York World Telegram, *Markland,* Liverpool, N. S., 566 rolls.
Brooklyn Daily Eagle, *Markland,* Liverpool, N. S. 448 rolls.
Washington Post, *Markland,* Liverpool, N. S., 1740 rolls.
Alexandria Gazette, *Markland,* Liverpool, N. S., 37 rolls.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Inc., *Asbury Victory,* Liverpool, 56 cs., 25 drums (Duplex).

RAGS, BAGGINGS, ETC.

Atlas Waste Manufacturing Co., *Noonda y,* Buenos Aires, 14 bls. threadwaste.
M. Segal & Sons, (Toronto), *Ivaran,* Buenos Aires, 241 bls. rags.
J. Eisenberg, *Ivaran,* Buenos Aires, 2 bls. rags, 158 bls. worsted waste.
New England Waste Co., *Delius,* Santos, 169 bls. cotton waste.
Castle & Overton, Inc., *Delftdyk,* Rotterdam, 57 bls. old cotton rags.
———, *Delftdyk,* Rotterdam, 111 bls. rags.
1st National Bank of Boston, *Asbury Victory,* Liverpool, 12 bls. rags.
Webster Atlas National Bank, *Asbury Victory,* Liverpool, 11 bls. rags, 37 bls. old wrappers and clips.
J. E. Bernard & Co., *Asbury Victory,* Liverpool, 32 bls. waste, 7 bls. rags.

OLD ROPE

W. J. Green & Co., *Deebank,* Calcutta, 105 bls. old hemp rope cuttings.
P. J. Schweitzer, Inc., *Deebank,* Calcutta, 176 bls. old hemp rope cuttings.

GLUESTOCK, ETC.

Polish Trading Co., *Delous,* Rio de Janeiro, 200 bags sheet bone glue.
Atlantic Gelatin Co., Inc., *Asbury Victory,* Liverpool, 210 bags hide cuttings.

CASEIN

American Cyanamid & Chemical Corp., *Sea Carp,* Buenos Aires, 3557 bags ground lactic casein, 392,000 kilos.
Sheffield Farms Co., Inc., *Delius,* Buenos Aires, 2,000 bags ground lactic casein.
National City Bank, *Delius,* Buenos Aires, 8,130 bags ground lactic casein.

### PHILADELPHIA IMPORTS

FOR THREE WEEKS ENDING MARCH 16, 1946

National Casein Sales Co., *Hastings,* Buenos Aires, 2032 bags lactic casein, 101600 kilos.

### NEW ORLEANS IMPORTS

FOR THREE WEEKS ENDING MARCH 16, 1946

S. J. Theriot, *Kregeholm,* Gothenburg, 361 rolls kraft paper.
———, *Kregeholm,* Gothenburg, 415 rolls, 1443 bls. wrapping paper.

### ALEXANDRIA, VA., IMPORTS

FOR THREE WEEKS ENDING MARCH 16, 1946

Montgomery Paper Co., *Borgfred,* St. Johns, N. F., 1395 rolls newsprint.

### NORFOLK IMPORTS

FOR THREE WEEKS ENDING MARCH 16, 1946

Montgomery Paper Co., *Borgfred,* St. Johns, N. F., 1234 rolls newsprint.

## Rohm & Haas Issues New Catalog

The newly published Rohm & Haas chemical catalog describes in considerable detail all products and developments up to the current time for the Rohm and Haas Company, Philadelphia, and its associates, the Resinous Products and Chemical Company and Charles Lenning and Company, Inc. Considerable space is devoted to the peacetime applications of the war-famous plastic, Plexiglas; the versatile ion exchange resins; the rapidly expanding family of emulsifiers, the Tritons; and the new and unusual bactericides, the Hyamines.

In the back of the book is a helpful glossary, listing and describing briefly all products manufactured by these companies.

## New Heat Transfer Booklet

The Swenson Evaporator Company Division of the Whiting Corporation, Harvey, Ill. has now ready for distribution its newly revised edition of "Heat Transfer and Crystallization." This 52-page booklet offers a practical presentation of the fundamental principles underlying modern evaporation and crystallization methods and equipment. Its editors are Dr. W. L. Badger, consulting engineer, and G. E. Seavoy, manager of the Swenson Evaporator Company. This booklet covers the basic principles of heat transfer, evaporator types and theory and practice of crystallization.

## Brochure Describes Aquastop Liner

Protective Coatings Corporation, 689 Main Street, Belleville 9, New Jersey, has issued a very complete and well-illustrated 8½x11 brochure of 16 pages on the application of AQUASTOP synthetic impregnated, waterproof, sealed case liners. This brochure illustrates and describes the steps in applying AQUASTOP to shipping case panels as well as the method of sealing, and also describes the physical characteristics, giving technical details resulting from tests of the material.